

The background of the cover features a large, stylized illustration of a motorcycle's front end, including the headlight, fender, and front wheel, rendered in a technical, line-art style. Overlaid on this are several large, interlocking gears of different sizes, creating a mechanical theme. The Honda logo, consisting of a red wing emblem and the word "HONDA" in a bold, red, sans-serif font, is positioned at the top left.

HONDA

SERVICE MANUAL

CB900F
919

A Few Words About Safety

Service Information

The service and repair information contained in this manual is intended for use by qualified, professional technicians. Attempting service or repairs without the proper training, tools, and equipment could cause injury to you or others. It could also damage the vehicle or create an unsafe condition.

This manual describes the proper methods and procedures for performing service, maintenance, and repairs. Some procedures require the use of specially designed tools and dedicated equipment. Any person who intends to use a replacement part, service procedure or a tool that is not recommended by Honda, must determine the risks to their personal safety and the safe operation of the vehicle.

If you need to replace a part, use genuine Honda parts with the correct part number or an equivalent part. We strongly recommend that you do not use replacement parts of inferior quality.

For Your Customer's Safety

Proper service and maintenance are essential to the customer's safety and the reliability of the vehicle. Any error or oversight while servicing a vehicle can result in faulty operation, damage to the vehicle, or injury to others.

For Your Safety

Because this manual is intended for the professional service technician, we do not provide warnings about many basic shop safety practices (e.g., Hot parts – wear gloves). If you have not received shop safety training or do not feel confident about your knowledge of safe servicing practices, we recommend that you do not attempt to perform the procedures described in this manual.

Some of the most important general service safety precautions are given below. However, we cannot warn you of every conceivable hazard and that can arise in performing service and repair procedures. Only you can decide whether or not you should perform a given task.

Important Safety Precautions

Make sure you have a clear understanding of all basic shop safety practices and that you are wearing appropriate clothing and using safety equipment. When performing any service task, be especially careful of the following:

- Read all of the instructions before you begin, and make sure you have the tools, the replacement or repair parts, and the skills required to perform the tasks safely and completely.
- Protect your eyes by using proper safety glasses, goggles or face shields any time you hammer, drill, grind, pry or work around pressurized air or liquids, and springs or other stored-energy components. If there is any doubt, put on eye protection.
- Use other protective wear when necessary, for example gloves or safety shoes. Handling hot or sharp parts can cause severe burns or cuts. Before you grab something that looks like it can hurt you, stop and put on gloves.
- Protect yourself and others whenever you have the vehicle up in the air. Any time you lift the vehicle, either with a hoist or a jack, make sure that it is always securely supported. Use jack stands.

Make sure the engine is off before you begin any servicing procedures, unless the instruction tells you to do otherwise. This will help eliminate several potential hazards:

- Carbon monoxide poisoning from engine exhaust. Be sure there is adequate ventilation whenever you run the engine.
- Burns from hot parts or coolant. Let the engine and exhaust system cool before working in those areas.
- Injury from moving parts. If the instruction tells you to run the engine, be sure your hands, fingers and clothing are out of the way.

Gasoline vapors and hydrogen gases from batteries are explosive. To reduce the possibility of a fire or explosion, be careful when working around gasoline or batteries.

- Use only a nonflammable solvent, not gasoline, to clean parts.
- Never drain or store gasoline in an open container.
- Keep all cigarettes, sparks and flames away from the battery and all fuel-related parts.

WARNING

Improper service or repairs can create an unsafe condition that can cause your customer or others to be seriously hurt or killed.

Follow the procedures and precautions in this manual and other service materials carefully.

WARNING

Failure to properly follow instructions and precautions can cause you to be seriously hurt or killed.

Follow the procedures and precautions in this manual carefully.

HOW TO USE THIS MANUAL

This service manual describes the service procedures for the CBR600F.

Follow the Maintenance Schedule (Section 2) recommendations to ensure that the vehicle is in peak operating condition.

Performing the first scheduled maintenance is very important. It prevents wear for the critical wear that occurs during the break-in period.

Sections 1 and 2 apply to the whole motorcycle. Section 3 illustrates procedures for disassembly of components that may be required to perform service described in the following sections.

Sections 4 through 12 describe parts of the motorcycle, grouped according to location.

Find the section you want on this page, then turn to the table of contents on the first page of that section.

Most sections start with an introductory or system illustration, service information and troubleshooting for the section. The subsequent pages give detailed procedures.

If you don't know the source of the trouble, go to section 22, Troubleshooting.

Your safety, and the safety of others, is very important. To help you make informed decisions we have provided safety messages and other information throughout this manual. Of course, it is not practical or possible to warn you about all the hazards associated with working on the vehicle. We shall use your own good judgment.

We will first important safety information in a variety of forms including a Safety Label on the vehicle.

• Safety Messages – provided for a safety and symbol  and one of three signal words: DANGER, WARNING, or CAUTION.

These signal words mean:



You **WILL** be KILLED or SERIOUSLY INJURED if you don't follow instructions.



You **CAN** be KILLED or SERIOUSLY INJURED if you don't follow instructions.



You **CAN** be HURT if you don't follow instructions.

• Instructions – how to service this vehicle properly and safely.

As you read this manual, you will find information that is preceded by a "NOTE" symbol. The purpose of this message is to help prevent damage to your vehicle, other property, or the environment.

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Honda Motor Co., Ltd.
SERVICE PUBLICATION OFFICE

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SYMBOLS

The symbols used throughout this manual show specific service procedures. If supplementary information is required pertaining to these symbols, it will be explained specifically in the text without the use of the symbols.

	Replace the part(s) with new one(s) before assembly.
	Use the recommended engine oil, unless otherwise specified.
	Use molybdenum oil solution (blend of the engine oil and molybdenum grease in a ratio of 1:1).
	Use multi-purpose grease (Lithium based multi-purpose grease NLGI #2 or equivalent).
	Use molybdenum disulfide grease (containing more than 3% molybdenum disulfide, NLGI #2 or equivalent). Example: Molykote® BR-2 plus manufactured by Dow Corning U.S.A. Multi-purpose M-2 manufactured by Mitsubishi Oil, Japan.
	Use molybdenum disulfide paste (containing more than 40% molybdenum disulfide, NLGI #2 or equivalent). Example: Molykote® G is Paste manufactured by Dow Corning U.S.A. Honda Moly 80 (U.S.A. only) Rocol ASP manufactured by Rocol Limited, U.K. Rocol Paste manufactured by Sumico Lubricant, Japan.
	Use silicone grease.
	Apply a locking agent. Use a medium strength locking agent unless otherwise specified.
	Apply sealant.
	Use DOT 4 brake fluid. Use the recommended brake fluid unless otherwise specified.
	Use fork or suspension fluid.

1. GENERAL INFORMATION

SERVICE RULES	1-1	LUBRICATION & SEAL POINTS	1-18
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SERVICE RULES

1. Use genuine Honda or Honda recommended parts and lubricants or their equivalents. Parts that don't meet Honda's design specifications may cause damage to the motorcycle.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing the motorcycle. Metric bolts, nuts and screws are not interchangeable with English fasteners.
4. Install new gaskets, O-rings, cotter pins, and lock plates when reassembling.
5. When tightening bolts or nuts, begin with the larger diameter or inner bolt first. Then tighten to the specified torque diagonally in incremental steps unless a particular sequence is specified.
6. Clean parts in cleaning solvent upon disassembly. Lubricate any sliding surfaces before reassembly.
7. After reassembly, check all parts for proper installation and operation.
8. Route all electrical wires as shown on pages 1-22 through 1-32, Cable and Harness Routing.

GENERAL INFORMATION

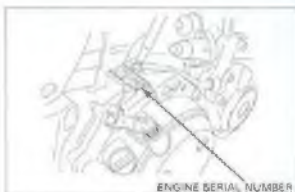
MODEL IDENTIFICATION



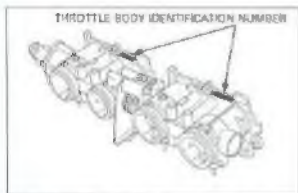
The Vehicle Identification Number (VIN) is located on the left side of the frame near the steering head.



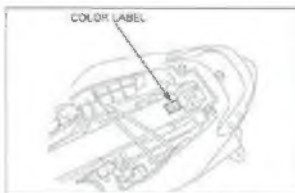
The engine serial number is stamped on the right side of the upper crankcase.



The frame serial number is stamped on the right side of the steering head.



The throttle body identification number is stamped on the intake side of the throttle body as shown.



The color label is attached as shown. When ordering color-coded parts, always specify the designated color code.

SPECIFICATIONS

GENERAL		
	ITEM	SPECIFICATIONS
DIMENSIONS	Overall length	2,125 mm (82.7 in)
	Overall width	750 mm (29.5 in)
	Overall height	1,085 mm (42.7 in)
	Wheelbase	1,460 mm (57.5 in)
	Seat height	795 mm (31.3 in)
	Posttop height	345 mm (13.6 in)
	Ground clearance	145 mm (5.7 in)
	Dry weight	Except California type 194 kg (429 lbs) California type 195 kg (430 lbs)
	Curb weight	Except California type 218 kg (481 lbs) California type 219 kg (483 lbs)
	Maximum weight capacity	174 kg (384 lbs)
FRAME	Frame type	Diamond
	Front suspension	Telescopic fork
	Front axle travel	109 mm (4.3 in)
	Rear suspension	Swinging
	Rear axle travel	122 mm (4.7 in)
	Front tire size	120/70 ZR 17 (65M), 120/70 ZR 17 M/C (58W)
	Rear tire size	180/60 ZR 17 (73W), 180/60 ZR 17 M/C (73W)
	Front tire brand	BT58R RADIAL N (Bridgestone)
		TX215 (Michelin)
	Rear tire brand	BT58R RADIAL G (Bridgestone)
		TX225 (Michelin)
	Front brake	Hydraulic double disc
	Rear brake	Hydraulic single disc
ENGINE	Center angle	25°
	Trail length	98 mm (3.9 in)
	Fuel tank capacity	19.0 liter (5.02 US gal, 4.18 imp gal)
	Cylinder arrangement	4 cylinders in-line, inclined 30° from vertical
	Bore and stroke	71.0 X 58.0 mm (2.80 X 2.28 in)
	Displacement	976 cc ³ (59.7 cu in)
	Compression ratio	10.8 : 1
	Valve train	Chain driven, DOHC
	Intake valve	opens at 7 mm (0.04 in) lift
		closes 16° BTDC
	Exhaust valve	opens 33° ABDC
		closes 35° BBDC
		6° ATDC
	Lubrication system	Forced pressure and wet sump
	Oil pump type	Rotary
	Cooling system	Liquid cooled
	Air filtration	Paper element
	Engine dry weight	68 kg (150 lbs)
	Firing order	1 - 2 - 4 - 3

GENERAL INFORMATION

GENERAL (Cont'd)		
	ITEM	SPECIFICATIONS
CARBURATION	Type	PGM-FI (Programmed Fuel Injection)
	Throttle bore	35 mm (1.4 in)
DRIVE TRAIN	Clutch system	Multi-plate, wet
	Clutch operation system	Cable operating
	Transmission	Constant mesh, 6-speeds
	Primary reduction	1.52 (76/50)
	Final reduction	2.885 (43/15)
	Gear ratio	2.769 (38/13)
		2.008 (26/13)
		1.600 (24/15)
		1.388 (25/18)
		1.227 (27/22)
		1.100 (25/23)
	Gearshift pattern	Left foot operated return system, 1 - N - 2 - 3 - 4 - 5 - 6
ELECTRICAL	Ignition system	Computer-controlled digital transistorized with electric advance
	Starting system	Electric starter motor
	Charging system	Triple phase output alternator
	Regulator/rectifier	SCR shunted triple phase, full wave rectification
	Lighting system	Battery

Unit: mm (in)

LUBRICATION SYSTEM

ITEM		STANDARD	SERVICE LIMIT
Engine oil capacity	After draining	3.5 liter (3.7 US qt, 3.1 imp qt)	—
	After draining/filter change	3.6 liter (3.8 US qt, 3.2 imp qt)	—
	After disassembly	4.4 liter (4.6 US qt, 3.9 imp qt)	—
Recommended engine oil		For Honda G34 or HP4 (without molybdenum additives): 4-stroke oil (USA & Canada), or Honda 4-stroke oil (Canada only), or an equivalent motor oil API service classification SG or Higher except oils labeled as energy conserving on the API service label. JASO T503 pendant MA Viscosity: SAE 10W-40	—
Oil pressure at oil pressure switch		490 kPa (3.6 kgf/cm ² , 71 psi) at 1,000 min ⁻¹ (rpm) (80°C/176°F)	—
Oil pump rotor	Tip clearance	0.15 (0.006)	0.29 (0.008)
	Body clearance	0.15 - 0.22 (0.006 - 0.009)	0.35 (0.011)
	Side clearance	0.02 - 0.07 (0.001 - 0.003)	0.10 (0.004)

FUEL SYSTEM (Programmed Fuel Injection)

ITEM		SPECIFICATIONS
Throttle body identification number	Europe/California type	G034C
	California type	G034B
Intake valve vacuum difference		265 kPa (20 mm Hg)
Base throttle valve for synchronization		149.2
Idle speed		1,200 ± 100 min ⁻¹ (rpm)
Throttle grip free play		2 - 4 mm (1/16 - 3/16 in)
Intake air temperature sensor resistance (at 20°C/68°F)		5 - 6 kΩ
Engine coolant temperature sensor resistance (at 20°C/68°F)		2.2 - 2.6 kΩ
Fuel injector resistance (at 20°C/68°F)		11.1 - 12.3 Ω
FAIR solenoid valve resistance (at 20°C/68°F)		20 - 24 Ω
Cem pulse generator peak voltage (at 20°C/68°F)		0.7 V minimum
Ignition pulse generator peak voltage (at 20°C/68°F)		0.7 V minimum
Manifold absolute pressure at idle		200 - 250 mm Hg
Fuel pressure at idle		343 kPa (3.5 kgf/cm ² , 50 psi)
Fuel pump flow (at 12 V)		256 cm ³ (9.7 US fl. oz, 0.9 imp oz) minimum/10 seconds

GENERAL INFORMATION

COOLING SYSTEM		SPECIFICATIONS
Coolant capacity	Radiator and engine	3.2 liter (3.38 US qt, 2.82 imp qt)
	Reserve tank	0.6 liter (0.63 US qt, 0.53 imp qt)
Radiator cap relief pressure		106 ~ 107 kPa (7.9 ~ 7.8 kgf/cm ² , 10 ~ 20 psi)
Thermometer	Begin to open	80 ~ 84 °C (176 ~ 183 °F)
	Fully open	95 °C (203 °F)
	Valve lift	8 mm (0.3 in) minimum
Recommended antifreeze		Pow Honda Coolant or an equivalent high quality ethylene glycol antifreeze containing corrosion protection inhibitors specifically recommended for use in aluminum engines
Guaranteed coolant concentration		50 ~ 55% mixture with soft water

Unit: mm (in)

CYLINDER HEAD/VALVES		STANDARD		SERVICE LIMIT
ITEM				
Cylinder compression		1,375 kPa (13.5 kgf/cm ² , 195 psi) at 350 min ⁻¹ (rpm)		—
Valve clearance	IN	0.15 ± 0.03 (0.006 ± 0.001)		—
	EX	0.25 ± 0.03 (0.010 ± 0.001)		—
Camshaft	Cam lobe height	IN	36.040 ~ 36.280 (1.419 ~ 1.428)	26.01 (1.42)
		EX	36.000 ~ 36.040 (1.408 ~ 1.418)	25.77 (1.41)
	Bushes	—		0.96 (0.002)
Valve lifter	Oil clearance	0.020 ~ 0.052 (0.008 ~ 0.002)		0.12 (0.004)
	valve lifter O.D.	26.015 ~ 26.053 (1.028 ~ 1.025)		26.07 (1.022)
Valve, valve guide	valve lifter bore I.D.	26.015 ~ 26.036 (1.024 ~ 1.024)		26.04 (1.035)
	valve stem O.D.	IN	4.475 ~ 4.480 (0.1762 ~ 0.1768)	4.485 (0.1768)
		EX	4.465 ~ 4.480 (0.1758 ~ 0.1764)	4.465 (0.1764)
	valve guide I.D.	IN/EX	4.500 ~ 4.512 (0.1772 ~ 0.1778)	4.540 (0.1787)
	Stem-to-guide clearance	IN	0.010 ~ 0.037 (0.0004 ~ 0.0015)	0.075 (0.0030)
		EX	0.020 ~ 0.047 (0.0008 ~ 0.0019)	0.095 (0.0033)
	valve guide projection above cylinder head	IN	14.8 ~ 16.7 (0.57 ~ 0.58)	—
		EX	14.8 ~ 15.8 (0.58 ~ 0.59)	—
Valve spring free length	IN	40.9 (1.61)		40.08 (1.576)
	EX	40.9 (1.61)		40.08 (1.576)
Cylinder head warpage		—		0.10 (0.004)

GENERAL INFORMATION

CRANKSHAFT/TRANSMISSION

Unit: mm (in)

ITEM			STANDARD	SERVICE LIMIT
Crankshaft	Side clearance		0.15 - 0.20 (0.007 - 0.008)	0.30 (0.012)
	Front			0.30 (0.012)
	Major journal fit clearance		0.017 - 0.035 (0.0007 - 0.0014)	0.04 (0.0015)
Transmission	Gear O.D.	M5, M6	28.102 - 28.021 (1.1074 - 1.1032)	28.04 - 04
		C1	24.000 - 24.021 (0.9449 - 0.9547)	24.04 (0.9449)
		C2, 3, 4	31.000 - 31.025 (1.2205 - 1.2215)	31.04 (1.222)
	Bushing O.D.	M5, 6	27.650 - 27.650 (1.1007 - 1.1015)	27.64 (1.100)
		C2	30.850 - 30.850 (1.2187 - 1.2187)	30.80 (1.216)
		C3, 4	30.900 - 30.900 (1.2165 - 1.2165)	30.85 (1.218)
	Bushing I.D.	M5	24.165 - 24.006 (0.9517 - 0.9545)	24.00 (0.955)
		C2	27.650 - 27.650 (1.1015 - 1.1025)	27.65 (1.100)
	Gear-to-bushing clearance	M5, 6	0.020 - 0.002 (0.0008 - 0.0024)	0.10 (0.004)
		C	0.120 - 0.070 (0.0006 - 0.0028)	0.11 (0.004)
		C3, 4	0.026 - 0.075 (0.0010 - 0.0030)	0.11 (0.004)
	Mainshaft O.D.	M5	24.967 - 24.960 (0.9830 - 0.9838)	24.96 (0.983)
		Match nut or guide	24.980 - 24.983 (0.9835 - 0.9840)	24.96 (0.983)
	Countershaft O.D.	C2	28.062 - 28.000 (1.1045 - 1.1015)	28.00 (1.101)
	Bushing-to-shaft clearance	M5	0.005 - 0.030 (0.0002 - 0.0012)	0.08 (0.003)
		C2	0.105 - 0.050 (0.0007 - 0.0015)	0.08 (0.003)

FRONT WHEEL/SUSPENSION/STEERING

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Minimum tire tread depth		5 (0.20)
Cold tire pressure	Driver only	250 kPa (2.50 kg/cm ² = 36 psi)
	Driver and passenger	250 kPa (2.50 kg/cm ² = 36 psi)
Auto output		0-10
Wheel run-out	Radial	2.0 (0.08)
	Axis	2.0 (0.08)
Wheel balance weight		80 g (2.7 oz) max
Front	Spring free length	282.5 (11.1)
	Shock absorber	276.7 (10.91)
	Horizontal rod/crk. ball	0.20 (0.008)
	Flare plate	155 (6.1)
	Flare plate	27.5 (1.08) max
Identify Honda bleeding procedure	10 ± 0.05 mm (0.4 ± 0.002 in)	

REAR WHEEL/SUSPENSION

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Minimum tire tread depth		7 (0.28)
Cold tire pressure	Driver only	250 kPa (2.50 kg/cm ² = 36 psi)
	Driver and passenger	250 kPa (2.50 kg/cm ² = 36 psi)
Auto output		0-10
Wheel run-out	Radial	2.0 (0.08)
	Axis	2.0 (0.08)
Wheel balance weight		80 g (2.7 oz) max
Rear shock	Shock	276.7 (10.91)
	Shock	276.7 (10.91)
	Shock	276.7 (10.91)

GENERAL INFORMATION

HYDRAULIC BRAKE

For more info:

ITEM		STANDARD		SERVICE LIMIT
Front	Specified brake fluid	DOT 4		
	Brake disc thickness	4.3 4.7 (0.17 ~ 0.19)		3.5 (0.14)
	Brake disc runout			0.3 (0.012)
	Master cylinder	4.000 4.043 0.55%	0.529"	4.043 0.533"
	Master piston O.D.	2.957 3.034 0.34%	0.5608"	2.946 0.5490"
	Slave cylinder	33.710 35.700 19.07	92	30.79 93.
		2.000 2.050 0.60%	0.656"	2.04 0.641"
Rear	Caliper piston O.D.	30.48 31.98 8.69	5.88"	30.4 5.87"
		20.918 20.948 1.05%	0.817"	19.91 0.769"
	Specified brake fluid	DOT 4		
	Brake disc thickness	4.8 5.2 (0.19 ~ 0.21)		4.0 (0.16)
	Brake disc runout			0.30 (0.012)
	Master cylinder	2.10 2.40 0.42%	0.787"	2.145 0.727"
	Master piston O.D.	12.05 12.04 0.08%	0.4724"	12.045 0.4718"
	Slave cylinder	14.10 14.10 0.5%	5.00	14.1 5.06"
	Caliper piston	40.00 40.40 1.00%	1.575"	39.0 1.500"

BATTERY/CHARGING SYSTEM

ITEM		SPECIFICATIONS
Battery	Capacity	12V - 65 AH
	Current leakage	1.2 mA max.
	Voltage (20°C/68°F)	12.0 13.2 V
		Normal 7.7 V
	Charging current	7 A/16 h
Alternator		6.0 A/1 h
	Capacity	0.75 kW/1500 rpm
	Charging coil resistance (20°C/68°F)	0.1 Ω

IGNITION SYSTEM

ITEM		SPECIFICATIONS
Spark plug	NGK	CRC65 B 9mm x 1 CRC65-B For all speeds (2000 rpm)
	UE15CU	U24FFR9 (Standard) U27FFR9 (For high running)
Spark plug gap		0.8 ~ 0.9 mm 0.03 ~ 0.04 in.
Ignition coil peak voltage		18.2 maximum
Ignition pulse generator peak voltage		6.7 V minimum
Ignition timing "P" mark:		18° BTDC at idly

ELECTRIC STARTER

UNIT: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Starter motor bearing length	12.0 ± 0.47 1.5	4.5 (0.18)

LIGHTS/METERS/SWITCHES

ITEM	SPECIFICATIONS
Bulbs	
Headlight	12 70 W
1.	12 35 W
Brake tail light	12 5 W X 2
Turn signal light	12 30 W X 2
Front	
Rear	12 5 W
License light	20 5 W
Instrument light	12V 1.7 W X 3
Oil signal indicator	20 1.5 W X 2
High beam indicator	LED
Neutral indicator	LED
Oil pressure indicator	LED
PGM-F warning indicator	LED
Fuel reserve indicator	
Fuse	
Main fuse	30 A
PLA fuse	7.5 A
Sub fuse	20 A 4 30 A 4
Volt meter peak voltage	5.5 max (peak)
ECT sensor	80 °C
ECT sensor	2.1 - 2.8 k Ω
Temperature	07 0.78 1

TORQUE VALUES

FASTENER TYPE	TORQUE N-m (kgf-m, lbf-ft)	FASTENER TYPE	TORQUE N-m (kgf-m, lbf-ft)
6 mm hex bolt and nut	5 ± 0.5 (0.4)	5 mm screw	4 (0.4, 0.3)
6 mm hex bolt and nut	10 (1.0, 0.7)	8 mm screw	8 (0.8, 0.6)
8 mm hex bolt and nut	20 ± 0.5	6 mm sl. wt. bolt with wash.	7 (0.7, 0.5)
10 mm hex bolt and nut	34 ± 0.5 (3)	8 mm sl. wt. bolt	12 (1.2, 0.8)
12 mm hex bolt and nut	54 ± 0.5 (4)	5 mm flange bolt (8 mm thread) slgr. range	4 (0.4, 0.3)
		4 mm flange bolt (5 mm thread) and nut	2.5 (0.25, 0.2)
		5 mm flange bolt and nut	3.4 (0.34, 0.24)
		10 mm flange bolt and nut	34 (4.3, 2.8)

[†] These calculations are based on data for 1997-2004.

• Qihu's should be rightened to its old name, *Qihu*, as it is the only one of its kind.

NOTES: 1. Apply sealant to the threads.

- 2 Apply a locking agent to the threads.

2000

4. Apply oil to the threads and flange surface.

男 1=put

- **ALOC not/always:** replace with a new one

7 Apply grease to the threads.

© Apply: Anybody can do it—be it the burglar or the thief or the thief.

1. ng/l

ITEM	QTY	THREAD DIA. (mm)	TORQUE N-m (kg-m, lb-ft)	REMARKS
MAINTENANCE				
Spark plug	4	M8	12 (1.2, 8)	
Timing chain set	1	M8	18 (1.8, 13)	NOTE 4
Injection oil decartridge	1	M8	20 (2.0, 20)	NOTE 4
Injection oil filter	1	M8	20 (2.0, 20)	
LUBRICATION SYSTEM				
Oil main gasket mounting base (10 mm)	1	M8	28 (2.8, 22)	NOTE 4
Oil gasket (10 mm)	1	M8	28 (2.8, 22)	NOTE 4
Oil cooler gasket (10 mm)	1	M8	28 (2.8, 22)	NOTE 4
FUEL SYSTEM (Preprogrammed Fuel Injection)				
ECT (Electronic Control) sensor (differential stroke)	1	M8	27 (2.7, 21)	
Throttle body (insulator band valve)	1	M8	See page 114	
Swirl valve (10 mm)	0	M8	27 (2.7, 21)	
Swirl valve (10 mm)	0	M8	27 (2.7, 21)	
Pressure regulator mounting base	2	M8	18 (1.8, 17)	
COOLING SYSTEM				
Water pump (10 mm)	2	M8	12 (1.2, 8)	NOTE 4
ENGINE MOUNTING				
Drive sprocket (10 mm)	1	M8	28 (2.8, 22)	

ENGINE (Cont'd)

ITEM	QTY	THREAD DIA. (mm)	TORQUE N-m (kg-m, lbf-ft)	REMARKS
CYLINDER HEAD/VALVES				
Cylinder head mounting bolt/washer	10	9	45 (4.9, 35)	NOTE 8
Camshaft intake flange bolt	20	6	12 (1.2, 9)	NOTE 4
Cylinder head cover bolt	8	8	10 (1.0, 7)	
Breather plate flange bolt	8	8	13 (1.2, 9)	NOTE 2, 8
P/R head valve cover SH bolt	8	6	12 (1.2, 9)	NOTE 9
Oil sprayer flange bolt	4	7	20 (2.0, 14)	NOTE 2
Cam pulse generator rotor flange bolt	2	8	12 (1.2, 9)	NOTE 2
Cylinder head nut bolt/washer/washer/dust cap	8	8	See pg 28 1-14	
CLUTCH/GEARSHIFT LINKAGE				
Clutch cable anchor bolt	1	22	128 (13.1, 98)	NOTE 3, 4
Clutch cable guide	2	6	2 (0.2, 0)	
Clutch pump drive sprocket bolt	1	8	15 (1.5, 1)	NOTE 4
Shift drum cover socket bolt	1	8	33 (3.3, 17)	NOTE 2
Shift drum stopper arm pivot bolt	1	6	12 (1.2, 9)	
Clutch cable guide spring pin	1	8	24 (2.4, 0)	
ALTERNATOR/FARTER CLUTCH				
Alternator stator socket bolt	4	8	12 (1.2, 9)	
Starter flange nut socket bolt	6	8	16 (1.6, 10)	NOTE 2
Starter flange nut	1	10	33 (3.3, 18)	NOTE 4
Starter wire clamp flange bolt	1	12	10 (1.0, 7)	NOTE 1, 9
CRANKCASE TRANSMISSION				
Mainshaft bearing oil guide bolt	2	6	2 (0.2, 0)	NOTE 2
Mainshaft oil seal spring lock shift wire bolt	2	6	7 (0.7, 9)	NOTE 2
Crankcase oil drain plug	10	9	2 (0.2, 10)	NOTE 1
Crankcase bolt	7	10	30 (3.0, 20)	
Crankcase bolt	14	6	12 (1.2, 9)	
Crankcase bolt	2	8	24 (2.4, 1)	
CRANKSHAFT/PISTON/CYLINDER				
Crankshaft pin bolt	8	8	14 (1.4, 10)	NOTE 4
IGNITION SYSTEM				
Ignition pulse generator rotor cover bolt	6	8	10 (1.0, 7)	
Ignition coil terminal nut/bolt cover at bolt	1	10	60 (6.0, 4)	
ELECTRIC FARTER				
Starter cable pin bolt at pin	1	8	2 (0.2, 0)	
LIGHTS/METERS/SWITCHES				
Light switch mount	1	PT 1/8	2 (0.2, 0)	NOTE
Oil pressure switch wire terminal bolt/washer	1	4	10 (1.0, 4)	
Ignition switch	1	10	4 (0.4, 0)	

GENERAL INFORMATION

insulator clamp (Throttle body side)

7 ± .05 mm 0.3 ± .004 in



insulator clamp (Cylinder head side)


mm 0.3 ± .004 in



Exhaust pipe stud bolt

42.5 ± 0.5 mm 1.67 ± 0.02 in



ITEM	QTY	THREAD DIA. (mm)	TORQUE N-m (kg-m, ft-lb)	REMARKS
FRAME BODY PANELS/EXHAUST SYSTEM				
Exhaust pipe clamp flange nut	1	8	20 (2.0, 14)	
Exhaust pipe clamp flange nut	1	5	20 (2.0, 14)	
Muffler mounting flange bolt	2	8	27 (2.8, 20)	
Muffler clamp flange nut	2	5	27 (2.8, 20)	
FUEL SYSTEM (Programmed Fuel Injection)				
Fuel filter assembly with air filter	1	4	20 (2.0, 14)	
Fuel pump sealant nut (throttle body side)	1	10	22 (2.2, 16)	
Fuel pump sealant nut	1	6	20 (2.0, 14)	
FUEL PUMP MOUNTING				
				
COOLING SYSTEM:				
Coolant pump mounting nut	1	5	20 (2.0, 14)	
Coolant pump mounting nut	1	5	20 (2.0, 14)	
ENGINE MOUNTING:				
Engine mounting bracket bolt	1	10	50 (5.0, 37)	
Red rubber mounting plate bolt	1	10	50 (5.0, 37)	
Hex bolt engine mounting bracket	1	10	50 (5.0, 37)	
Gas spring linkage bolt	1	5	20 (2.0, 14)	
FRONT WHEEL/SUSPENSION/STEERING				
Hex flange nut with washer	2	5	20 (2.0, 14)	
Hex flange nut	12	5	20 (2.0, 14)	
Front axle bolt	1	10	50 (5.0, 37)	
Front axle holder flange bolt	1	10	22 (2.2, 16)	
Front brake hose clamp flange bolt (left front)	1	5	20 (2.0, 14)	
Front brake hose clamp flange bolt (right front)	1	5	20 (2.0, 14)	
Spring plate bolt	2	5	20 (2.0, 14)	
Spring plate	2	10	50 (5.0, 37)	
Shock absorber pin anchor bolt	2	5	20 (2.0, 14)	
Shock absorber pin anchor bolt	1	5	20 (2.0, 14)	
Steering bearing adjusting nut	1	10	22 (2.2, 16)	
Steering bearing adjusting nut lock nut	1	10	22 (2.2, 16)	
Steering idler nut	1	10	22 (2.2, 16)	
Right brake hose clamp bolt (steering stand)	1	5	20 (2.0, 14)	

GENERAL INFORMATION

FRAME (Cont'd)

	QTY	THREAD DIA. (mm)	TORQUE N-m (lbf-ft)	REMARKS
REAR WHEEL/SUSPENSION				
Rear brake disc bolt	4	8	42 (4.3 37)	NOTE 5
Final drive sprocket nut		7	108 (11.0 80)	NOTE 5
Rear axle nut		8	83 (8.6 60)	NOTE 5
Rear shock absorber upper mounting bolt		0	42 (4.3 37)	
Rear shock absorber upper mounting nut		0	42 (4.3 37)	NOTE 5
Drive chain slider flange bolt	4	6	9 (0.9 6.5)	NOTE 5
Swingarm pivot nut		8	83 (8.6 60)	
HYDRAULIC BRAKE:				
Front master cylinder reservoir cap screw	2	4	7 (0.7 0.7)	
Front brake lever pivot bolt			30.1 (3.1)	
Front brake lever pivot nut		6	6 (0.7 4.7)	
Front brake light switch screw		1	0 (0.1)	
Front master cylinder mounting bolt	4	6	12 (1.2 5)	
Front brake caliper assembly torque bar	8	8	27 (2.7 2.6)	NOTE 2
Front brake caliper mounting flange bolt	4		40 (4.0 32)	NOTE 6
Rear master cylinder push rod lock nut		2	1 (0.1)	
Rear master cylinder mounting bolt	4		16 (1.6)	
Rear brake caliper bracket bolt		8	43 (4.3)	
Rear brake caliper pin bolt		7	1 (0.1 2)	
Pin	1	0	17 (1.7 1.3)	
Pin clip		1	3 (0.3 2.7)	
Pin screw	1	0	34 (3.5 2.5)	
Brake caliper bleed valve	2		8 (0.8 4.3)	
Brake holder mounting bolt	4	8	27 (2.8 20)	
Rear master cylinder hose pin screw	4	6	10 (1.0 7)	
LIGHTS/METERS/SWITCHES				
Side stand switch bolt		6	10 (1.0 1)	NOTE 5
Ignition switch mounting bolt		6	25 (2.5 18)	
Rear motor switch		6	18 (1.8 2)	NOTE 5
OTHER				
Side stand pivot bolt		7	10 (1.0 1)	
Side stand pivot lock nut		8	39 (4.0 29)	

GENERAL INFORMATION

LUBRICATION & SEAL POINTS

ENGINE	LOCATION	MATERIAL	REMARKS
Centrifugal pump surface		Aluminum Type 6061-T6 2918-01	
Oil pan mating surface			
Oil pressure switch threads			
Ignition pulse pickup sensor cable threads			
Apply sealant to the thread head 6.5 mm			
Marked "A"			

ENG-NE (Cont'd)

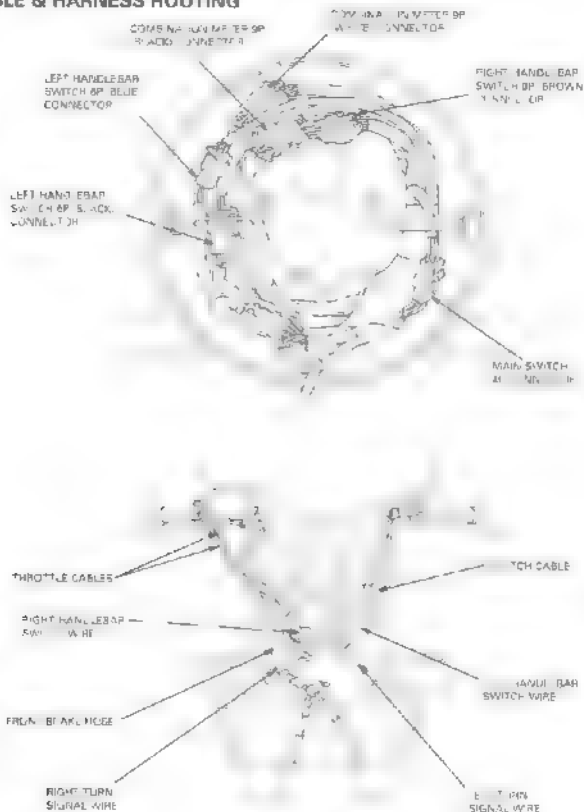
LOCATION	MATERIAL	REMARKS
Ignition pulse generator ground	Solder	Crosshatched mating surface
ECT (engine coolant temperature sensor) threads		Coating width: 8,5 ± 1 mm
Cam pulse generator rotor bolt threads		
Lower crankcase sealing bolt threads		
Cylinder head sealing bolt threads		
AC generator bolt threads		
Cylinder head semi-circular cut-out		
APPROX POSITION		
Main journal bearing surface	Molybdenum disulfide oil lubrication of 1/2	
Piston pin sliding surface	lubricate of 1/2	
Connecting rod bearing surface	molybdenum disulfide grease	
Connecting rod small end upper surface		
Crankshaft dust surface		
Air filter housing air inlet		
Valve cover		
Valve guide		
Valve lifter		
Clutch outer/primary driven gear sliding surface		
Clutch outer guide sliding surface		
Main, CB, CB outer gear (shaft free grooves)		
Starter reducer gear shaft outer surface		
Intake sliding arm	engine oil	
Oil strainer packing		
Clutch disc surface		
Starter one-way clutch sliding surface		
Connecting rod nut threads		
Flywheel bolt threads and seating surface		
Main journal 8 mm bolt threads and seating surface (after removing anti-rust oil additive)		
Clutch cover lock nut threads		
Oil filter cartridge threads and O-ring		
Cam shaft holder bolt threads and seating surface		
Cam chain tensioner, tensioner roller seating surface		
Oil cooler center bolt threads		
End gear shaft and rotating surface		
End bearing		
End O-ring		
Other coating area and sliding surface		

GENERAL INFORMATION

ENGINE (Cont'd)			
LOCATION	MATERIAL		REMARKS
Timing table cap threads	Anti-rust grease		
Each oil seal lip	Anti-rust grease		
Valve rock arm seal ring bolt threads	Anti-rust grease		
Injector nozzle cone threads	Anti-rust grease		
Cam pulse generator rotor bolt threads	Anti-rust grease		Coating width 15 mm
Starter one way clutch outer bolt threads	Anti-rust grease		
Oil pump driven sprocket bolt threads	Anti-rust grease		
Shift drum bearing set plate bolt threads	Anti-rust grease		
Mainshaft bearing set plate bolt threads	Anti-rust grease		
Clutch sprocket bolt threads	Anti-rust grease		
Shift drum center bolt threads	Anti-rust grease		
Shift plate tightening bolt threads	Anti-rust grease		
Oil filter base threads	Anti-rust grease		

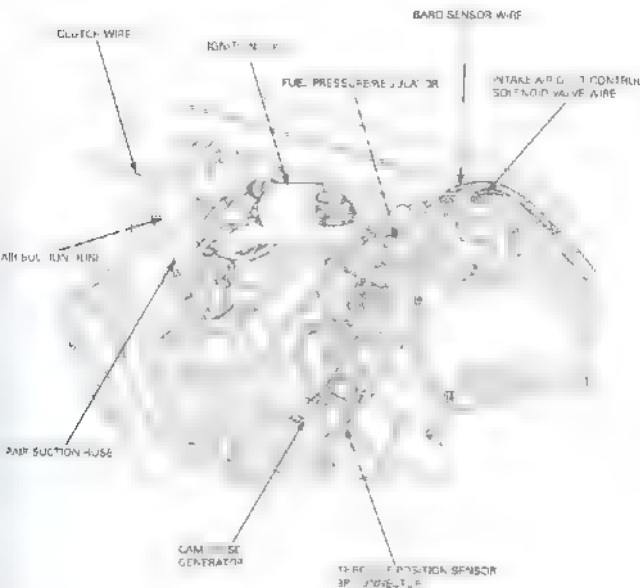
FRAME	LOCATION	MATERIAL	REMARKS
Seat catch hook sliding area		Aluminum alloy	
Front wheel dust seal lips			
Rear wheel dust seal lips			
Clutch lever pivot bolt sliding area			
Rear brake pedal pivot sliding area			
Gas shock pivot			
Seat stand pivot			
Steering head bearing sliding surfaces			
Steering head dust seal lips			
Swingarm pivot bearing			
Swingarm pivot dust seal lips			
Shock absorber needle bearings			
Shock absorber dust seal lips			
Throttle cable A B outer knuckle		Steel	
Clutch cable outer knuckle			
Handbrake grip rubber inliner			
Steering bearing adjustment nut threads		Engine oil	
Front brake lever-to-master piston contacting area		Silicone grease	
Front brake lever pivot			
Rear master brake master piston-to-push rod contacting area			
Brake caliper dust seals			
Rear brake caliper bolt inside			
Rear brake caliper pin bolt inside			
Brake master piston and cups		DOT 4 Brake fluid	
Brake caliper piston and piston seals			
Fork cap O-ring		DOT 4 Brake fluid	
Fork dust seal and oil seal lip			
Rear brake reservoir hose joint seal threads			
Front brake caliper assembly bolt threads			
Rear brake caliper pin bolt threads			
Front fork socket bolt threads			

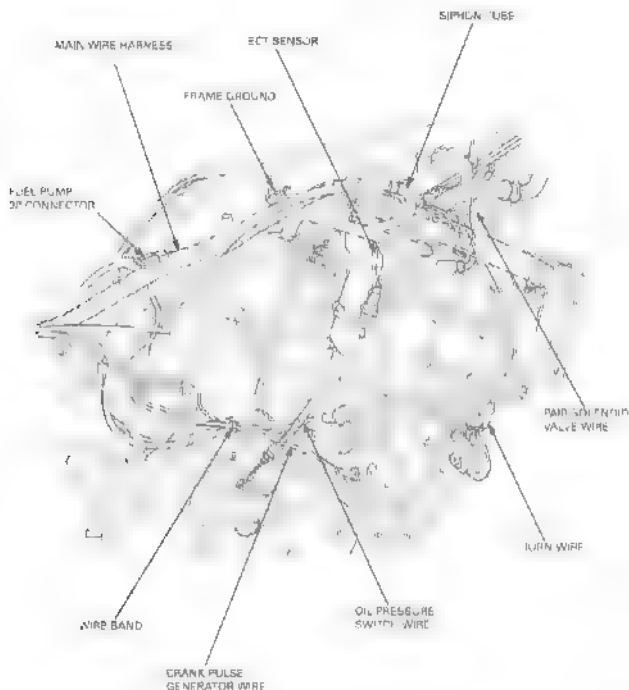
CABLE & HARNESS ROUTING



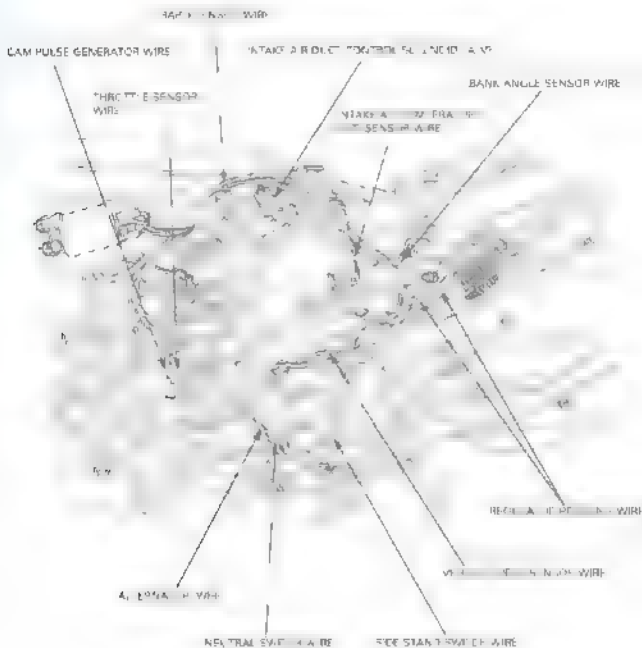


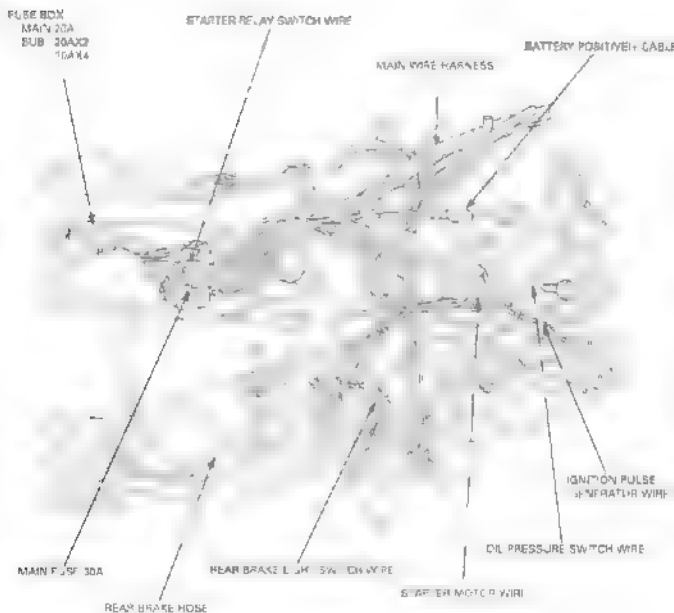
GENERAL INFORMATION

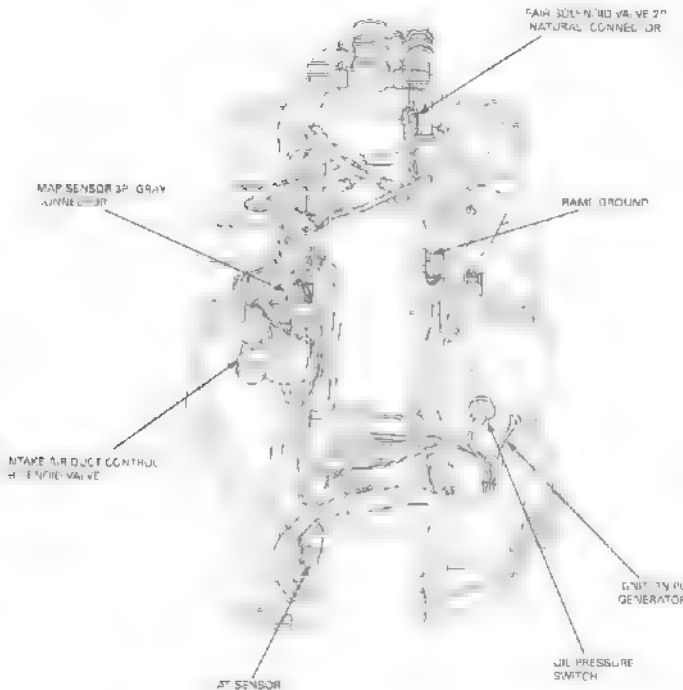




GENERAL INFORMATION

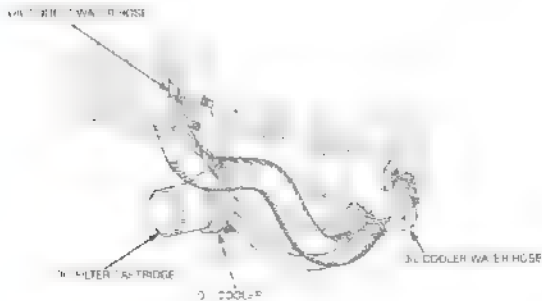






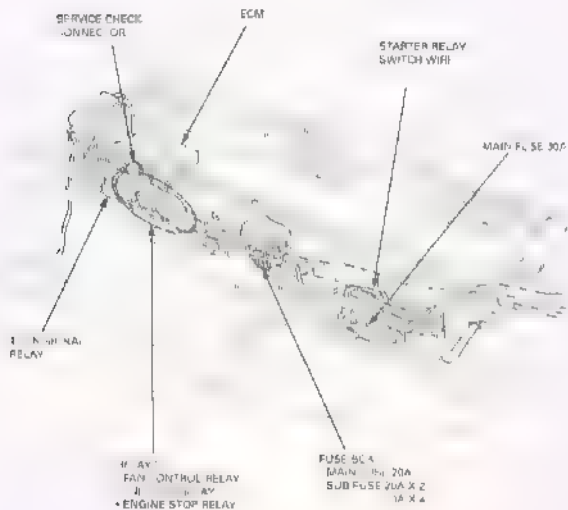


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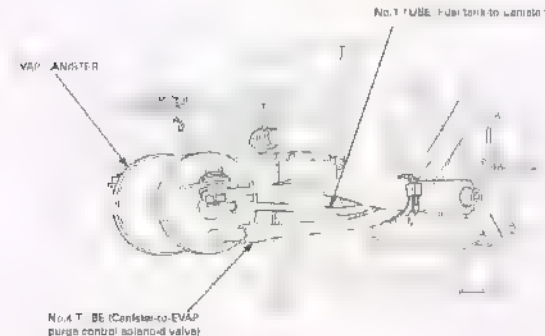




GENERAL INFORMATION

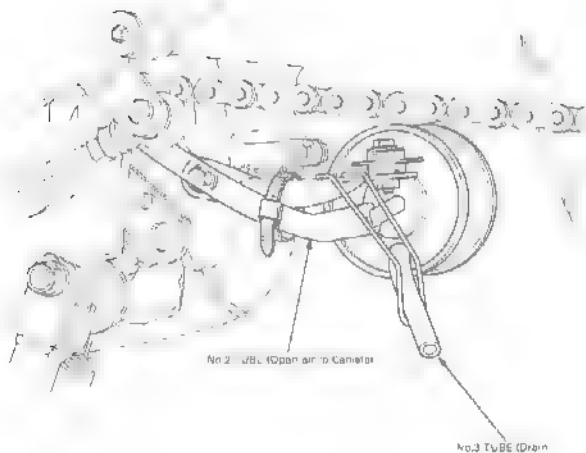


California type only



GENERAL INFORMATION

California type only



EMISSION CONTROL SYSTEMS

SOURCE OF EMISSIONS

The combustion process releases carbon monoxide as a hydrocarbon. Carbon monoxide is a very important because, unlike hydrocarbons, it is not flammable. It is also a very toxic gas. Carbon monoxide does not

Monte Carlo Co. Ltd. is a company that is not a subsidiary of the parent company.

CRANKCASE EMISSION CONTROL SYSTEM

Now pop is returned



GENERAL INFORMATION

EXHAUST EMISSION CONTROL SYSTEM (SECONDARY AIR SUPPLY SYSTEM)

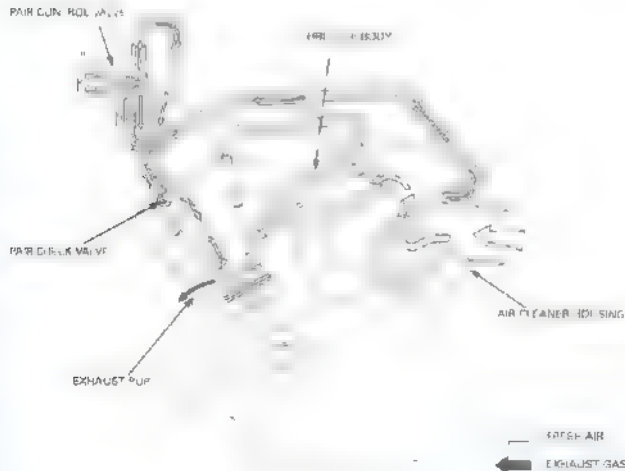
The exhaust emission control system is composed of a wastegate, jetting, and no adjustments should be made except idle speed adjustment. The exhaust emission control system is separate from the crankcase emission control system.

The exhaust emission control system consists of a secondary air supply system that introduces fresh air into the exhaust stream of the exhaust manifold through the wastegate by the function of a PAIR Pulse Secondary Air Injection control valve.

The wastegate valve moves during the current exhaust stroke and of engine a considerable amount of hydrocarbon emissions are converted to harmless carbon dioxide and water vapor.

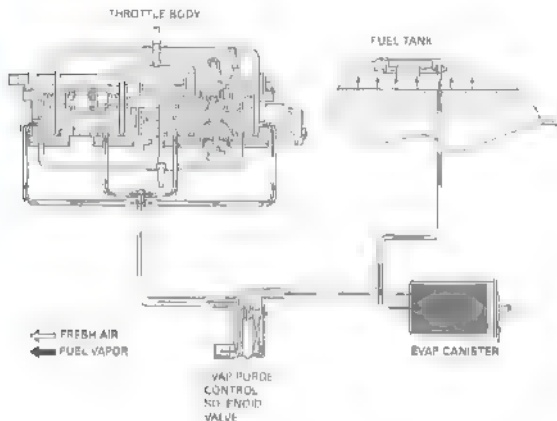
The wastegate valve controls flow through the wastegate. The PAIR control valve is operated by the wastegate valve. The wastegate valve is controlled by the PAIR control valve. The wastegate valve is controlled by the PAIR control valve (ECT/AT/TP/MAF sensor and engine revolution).

No air filter is required for the secondary air supply system. No oil should be added although periodic inspection of the components is recommended.



EVAPORATIVE EMISSION CONTROL SYSTEM (CALIFORNIA TYPE ONLY)

This vehicle complies with California Air Resources Board evaporative emission requirements. The vehicle has a closed-loop evaporative emission (EVAP) system which is absorbed and stored while the engine is stopped. When the engine is running and the evaporative emission (VAP) purge control solenoid valve is open, the vapor in the EVAP canister is drawn into the engine through the throttle body.



NOISE EMISSION CONTROL SYSTEM

TAMPERING WITH THE NOISE CONTROL SYSTEM IS PROHIBITED: Local law prohibits the following acts on the California vehicle: (1) tampering with or rendering inoperative any device or any part of the vehicle which is a component, part or subcomponent of any device or system or design incorporated into any new vehicle for the purpose of noise control; or (2) the use of the vehicle after such device or system or design has been removed or rendered inoperative by any person.

AMONG THOSE ACTS PRESUMED TO CONSTITUTE TAMPERING ARE THE ACTS LISTED BELOW:

1. Removal of or tampering with the muffler, catalytic converter or any other component which conducts exhaust gases.
2. Removal of or puncturing of any part of the intake system.
3. Lack of proper maintenance.
4. Replacing any moving parts of the vehicle or parts of the exhaust or intake system, with parts other than those specified by the manufacturer.

EMISSION CONTROL INFORMATION LABELS (U.S.A. ONLY)

An Emission Control Information Label is located on the main frame as shown. It gives basic "tune-up" specifications.

The fuel tank must be tilted up to read. Refer to page 3-15 for fuel tank opening.

EMISSION CONTROL INFORMATION LABEL

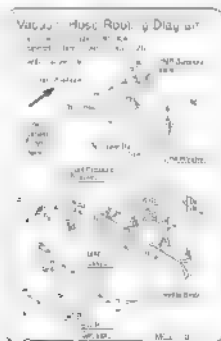
CANADA TYPE ONLY

VACUUM HOSE ROUTING DIAGRAM LABEL (CALIFORNIA TYPE ONLY)

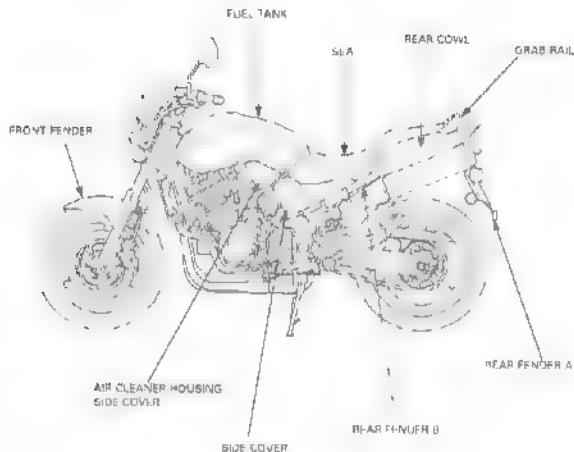
The Vacuum Hose Routing Diagram Label is on the main frame as shown.

The fuel tank must be tilted up to read it. Refer to page 3-15 for fuel tank opening.

VACUUM HOSE ROUTING DIAGRAM LABEL



BODY PANEL LOCATIONS



2. FRAME/BODY PANELS/EXHAUST SYSTEM

BODY PANEL LOCATIONS	2-0	REAR COWL	2-3
SERVICE INFORMATION	2-1	FRONT FENDER	2-3
TROUBLESHOOTING	2-1	REAR FENDER A	2-4
SEAT	2-2	REAR FENDER B	2-4
SIDE COVER	2-2	MUFFLER/EXHAUST PIPE	2-5
AIR CLEANER HOUSING SIDE COVER	2-2		

2

SERVICE INFORMATION

GENERAL

When it is not ventilated used. Smoking or a lowering flames or sparks the work area or where gasoline is stored can cause a fire or explosion.

For safety, never remove and install air filter easily, do not air filter at system.

Get the air filter weight. Overweight of system, remove all the air filter, or remove the air filter, or remove the air filter.

Always replace the exhaust pipe gaskets after removing the exhaust pipe from the engine.

TORQUE VALUES

Exhaust pipe joint flange nut

20 ft-lb (2.0 kgf-m) 4 ft-lb (0.4 kgf-m)

Exhaust pipe joint flange bolt

7 ft-lb (0.7 kgf-m) 2 ft-lb (0.2 kgf-m)

Exhaust pipe joint bolt

22 ft-lb (2.2 kgf-m) 2 ft-lb (0.2 kgf-m)

Muffler band flange nut

7 ft-lb (0.7 kgf-m) 2 ft-lb (0.2 kgf-m)

Muffler mounting bolt

21 ft-lb (2.1 kgf-m) 2 ft-lb (0.2 kgf-m)

TROUBLESHOOTING

Excessive exhaust noise

- Air filter is clogged system
- Exhaust gas leak

Poor performance

- Air filter is clogged system
- Exhaust gas leak
- Clogged muffler

SEAT

REMOVAL

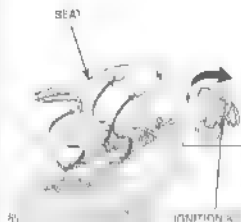
Unhook the seat with the ignition key.

Pull the seat back and remove it.

INSTALLATION

Align the seat hooks with the frame hooks and push the seat forward.

Push the seat down until it locks.



SIDE COVER

REMOVAL

Remove the seat (page 7-2).

Remove the side cover bolt.

Remove the front tab from the fuel tank and remove the air tab from the grommet of the frame.

Remove the side cover.

Installation is in the reverse order of removal.



AIR CLEANER HOUSING SIDE COVER

REMOVAL/INSTALLATION

Remove the socket caps and air cleaner housing side cover.

Installation is in the reverse order of removal.



REAR COWL

REMOVAL/INSTALLATION

Remove the seat and side cover page 20

Remove the call/brake lights ZIP connector.

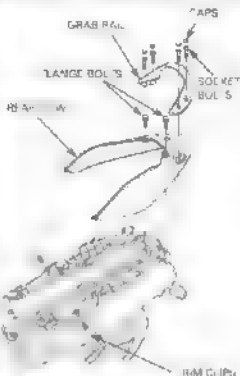
Remove the caps from the suction bolts.

Remove the four socket bolts and grab rail.

Remove the two trim clips and socket bolts.

Remove the rear cowl by pulling it back.

Installation is in the reverse order of remove.



FRONT FENDER

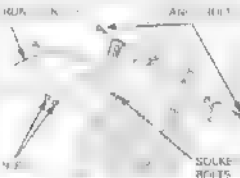
REMOVAL/INSTALLATION

Remove the brake hose clamp bolts and reflectors.

Remove the front fender mounting socket bolts/was and flange bolts.

Remove the front fender.

Installation is in the reverse order of remove.



REAR FENDER A

REMOVAL/INSTALLATION

Remove the rear cowl (page 2-3).

Remove the following:

- R/L turn signal light 2P connector
- License light 2P connector

Remove the socket bolts/nuts and flange bolts.

Remove the rear fender A.

Installation is in the reverse order of removal.



REAR FENDER B

REMOVAL/INSTALLATION

Remove the rear fender A (see upper).

Remove the following:

- Turn signal light 2P connector

Starter relay switch

See Fig. 4

Fan control relay

See Fig. 4

Engine stop relay

Turn signal relay

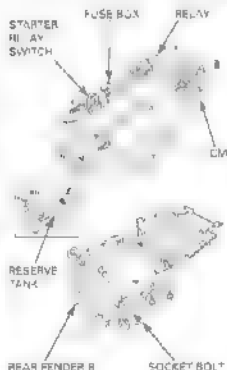
PGM-FI/IGN unit/Engine control module(ECM)

PGM-FI/IGN
unit/ECM
and starter relay/CMV
(See Fig. 4)

Remove the socket bolts and flange bolts.

Remove the rear fender B from the frame.

Installation is in the reverse order of removal.



MUFFLER/EXHAUST PIPE

NOTICE

REMOVAL

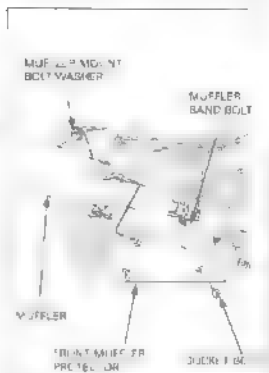
Remove the rear cover page 2-3.

Remove the socket bolt and remove the front muffler protector by pulling it forward.

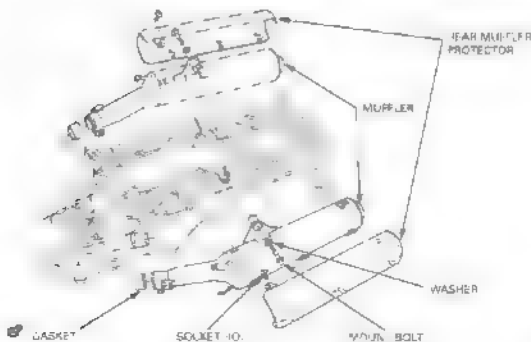
Loosen the muffler band bolt.

Remove the muffler mounting bolt and washer.

Remove the muffler.



DISASSEMBLY/ASSEMBLY



INSTALLATION



Install the muffler and locate the rear of the muffler against the rear wheel.

Adjust the muffler to the rear wheel and secure the muffler band bolts to the specified torque.

TORQUE

Muffler mounting bolt 27 N-m (2.8 kg-m, 20 lb-ft)

Muffler band bolt 27 N-m (2.8 kg-m, 20 lb-ft)

Recall the clearance of the muffler and radiator.

Install the muffler and secure the muffler band bolts to the specified torque.

Refer to the rear wheel (page 2.4).



EXHAUST PIPE

REMOVAL

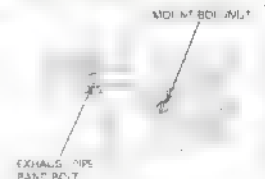
Remove the muffler (page 2.4).

Remove the two radiator mounting bolts.

Remove the radiator guide from the frame and move the radiator forward.



Loosen the exhaust pipe band bolt and secure the pipe mounting bolts.



Remove the exhaust pipe joint nuts, exhaust pipe mounting bolt, washer and nut.

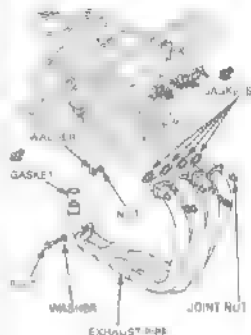
Remove the exhaust pipe joint gaskets.

INSTALLATION

Install the new exhaust pipe gaskets and exhaust joint pipe gasket.

Install the exhaust pipe and loosely tighten the exhaust pipe joint nuts, exhaust pipe mounting bolts, washers and nuts.

Install the muffler (page 2-6).



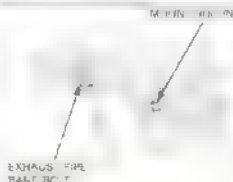
Tighten the bolt/nut to the specified torque sequence.

TORQUE

1. Exhaust pipe joint nut:
75 N·m (2 1/2 kg-m, 14 lbf-ft)
2. Exhaust pipe band bolt:
37 N·m (2 1/2 kg-m, 20 lbf-ft)
3. Exhaust pipe mount bolt/nut:
37 N·m (2 1/2 kg-m, 20 lbf-ft)

Recheck the clearance at the muffler and tail pipe (page 2-6).

Install the radiator to the frame rail and tighten the radiator mounting bolts securely.



3. MAINTENANCE

SERVICE INFORMATION	3-1	DRIVE CHAIN	3-18
MAINTENANCE SCHEDULE	3-3	DRIVE CHAIN SLIDER	3-20
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THROTTLE OPERATION	3-4	FRONT FENDER	3-21
ENGINE INFORMATION	3-5	BRAKE SYSTEM	3-21
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EVAPORATIVE EMISSION CONTROL SYSTEM (California type only)	3-15		

SERVICE INFORMATION

GENERAL

- Place the motorcycle on a level ground before starting any work.
- Work in a well ventilated area. Smoking or drinking flammable liquids in the work area or where the gasoline is stored can cause a fire or explosion.
- The engine must be running to do some work. Always use proper technique when using tools. Never run the engine in an enclosed area.
- The engine must be running to do some work. Always use proper technique when using tools. Never run the engine in an enclosed area.

SPECIFICATIONS

TORQUE VALUES

[illegible]

TODDS

Oil Filter wrench 0714AA-1J70700
Drive chain tool set 071404-1-64070100

MAINTENANCE SCHEDULE

Perform the Pre-ride inspection in the Owner's Manual at each scheduled maintenance period.

Inspect and, if necessary, Adjust (bracketed) (replace, if necessary) (Clean, if necessary) (Replace & Adjust, if necessary) Lubricate

The following list is required for basic motorcycle knowledge. Certain items, particularly those marked * and **, may require more technical information and tools. Consult the authorized Honda dealer.

ITEM	FREQUENCY	WHICHEVER COMES FIRST	ODOMETER READING (NOTE 1)										REFER TO PAGE
			1,000 mi	0.6	4	8	12	16	20	24	28	32	
		NOTE	x 100	x 10	64	128	192	256	320	384			
FUEL LINE													34
THROTTLE OPERATION													34
CHUKE OPERATION													34
AIR CLEANER		NOTE 3											34
CRANKCASE BREATHER		NOTE 3											34
SPARK PLUGS													38
VALVE CLEARANCE													38
ENGINE OIL FILTER													38
ENGINE OIL REPLACEMENT													38
RADIATOR COOLANT		NOTE 6											38
Cooling System													38
SECONDARY AIR SUPPLY SYSTEM													38
EVAPORATIVE EMISSION CONTROL SYSTEM		NOTE 4											38
DRIVE CHAIN													38
Brake System		NOTE 5											38
Brake Pad Wear													38
Brake Light Switch													38
Headlight Aim													38
Clutch System													38
Side Stand													38
Shift Pedal													38
Nuts, Bolts, Fasteners													38
Wheels/Tires													38
Steering Head Bearings													38

* should be serviced by an authorized Honda dealer unless the owner has proper tools and service skills and is mechanically qualified.

** for interest of safety, wear and tear, these items be serviced only by an authorized Honda dealer.

- At higher speeds, the motorcycle is more likely to lose control in the event of a sudden stop.
- Service more frequently if the motorcycle is ridden in unusually wet or dusty areas.
- Service more frequently if the motorcycle is ridden off-road or in other areas where the terrain is rough.
- California type only.
- Replace every 2 years, or at indicated odometer intervals, whichever comes first. Replace only with equivalent skill.

FUEL LINE

Remove the side covers (page 2-7).

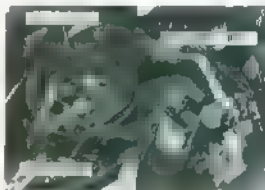
Loosen the fuel tank mounting brackets.

Move the fuel tank back.

Open and support the front end of the fuel tank using a suitable support or stand.

SOI TOWASHERS

SUPPORT STAND



Work the fuel lines to remove other deposits and dirt. Replace the fuel line if necessary.

Install the fuel line and secure with the proper fasteners.

THROTTLE OPERATION

Check for smooth throttle grip full opening and zero fuel cut-off during idling operation.

Check the throttle cable for proper adjustment. They are deteriorated, kinked or damaged.

Adjust the throttle cable. The throttle operation is not smooth.

Measure the free play at the throttle cable range.

FREE PLAY: 2 - 4 mm (1/16 - 1/8 in.)

2 - 4 mm (1/16 - 1/8 in.)

Throttle grip free play can be adjusted at either end of the throttle cable.

Minor adjustments are made with the upper adjuster. Adjust the free play by loosening the lock nut and turning the adjuster.



Major adjustments are made with the lower adjuster.

Open and support the front end of the fuel tank (page 3-4).

Adjust the free play by loosening the lock nut and turning the adjuster.

After adjustment, tighten the lock nut securely.

Recheck the throttle operation.

Finish any damaged parts, if necessary.



CHOKE OPERATION

Check the air filter housing and choke cable for damage.

Check the choke cable and the air filter for damage or deterioration.

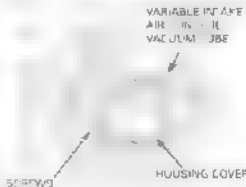
Lubricate the choke cable if there is a leak or if it is not working.



AIR CLEANER

Remove the air filter cover (page 3-7).

Remove the variable intake air pipe and vacuum tube from the air cleaner housing cover. Remove the screws and air cleaner housing cover. Remove and check the air cleaner elements in accordance with the maintenance schedule (page 3-3).



MAINTENANCE

Clean the air cleaner element using compressed air anytime it is excessively dirty or damaged.

Install the removed parts in the reverse order of removal.

ELEMENT

CRANKCASE BREATHER

Remove the side cover (page 3-2).

Disconnect and clean the drain tube.
Connect the drain tube.

DRAIN TUBE

SPARK PLUG

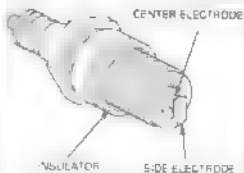
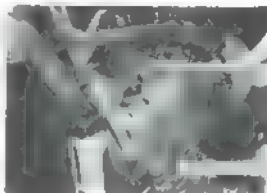
REMOVAL

1. Disconnect the negative terminal of the battery.
2. Remove the spark plug using the spark plug socket.
3. Turn the spark plug 1/2 turn clockwise.
4. Remove the spark plug using the spark plug wrench or an equivalent tool.

Inspect or replace as described in the maintenance schedule.

INSPECTION

- Check the following items if the spark plug is removed:
- Insulate for damage
 - Insulate for wear
 - Blowing condition (carbon)



REJISING A SPARK PLUG

Clean the spark plug electrodes with a wire brush or spark plug cleaner.

Check the gap or wear the center and side electrodes with a wire-type feeler gauge.

If necessary, adjust the gap by bending the side electrode carefully.

SPARK PLUG GAP ϕ 8 0.8 mm (0.03 0.04 in)

Reinstall the spark plugs in the cylinder head and hand-tighten, then torque to specification.

TORQUE 12 N·m (1.2 kgf-m, 9 lbf-ft)

REPLACING A SPARK PLUG

Set the plug to specification with a wire-type feeler gauge (see above).

Install the new lighter (or new spark plug), hand-tighten, then torque to specification. Then install the seal ring and plug tube.

Reinstall the radiator onto the frame cover (page 3-6).

ϕ 8 0.8 mm
(0.03 0.04 in)



VALVE CLEARANCE

INSPECTION

Open and support the front end of the fuel tank (page 3-4).

Remove the cylinder head cover (page 3-4).

Remove the cam chain cover after sealing bolt and sealing washer.

Repeat and adjust the valve clear.



Turn the cam chain cover (engine oiler) fully and secure it using the fastener at the end (page 3-7).

CAM CHAIN COVER BOLT



STOPPER TORN



Remove the timing hose cap and O-ring.



Turn the crankshaft clockwise, align the "T" mark on the ignition pulse generator rotor with the index mark on the right crankcase cover.



The timing marks "IN" and "EX" on the cam sprockets must be flush with the cylinder head surface and facing outward as shown.

If the timing marks on the cam sprockets facing inward, turn the crankshaft clockwise one full turn (360°) and realign the timing marks with the cylinder head surface so they are facing outward.



Insert the feeler gauge between the valve stem and the cam lobe.

Check the valve clearance for the No. 1 and No. 3 cylinder intake valves using a feeler gauge.

VALVE CLEARANCE

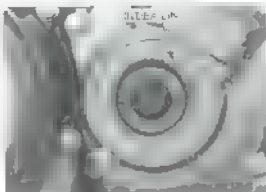
IN: 0.16 ± 0.03 mm (0.006 ± 0.001 in)

NO. 1 INTAKE VALVES NO. 3 INTAKE VALVES



When the adjustment is required, turn the adjustment screw clockwise to increase the clearance or counter-clockwise to decrease it.

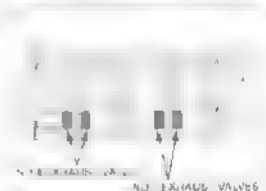
Turn the crankshaft clockwise 1/2 turn (180°) align the index line on the ignition pulse generator rotor so that it is facing up as shown.



Check the valve clearance for the 1st and 4th cylinders for both valves using a feeler gauge.

VALVE CLEARANCE

EX: 0.20 ± 0.02 mm (0.010 ± 0.001 in)



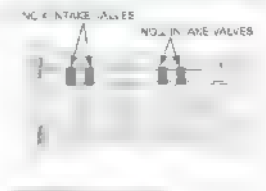
Turn the crankshaft clockwise 1/2 turn (180°) align the 4th mark on the ignition pulse generator rotor with the index mark on the right crankcase cover.



Check the valve clearance for the 1st and 4th cylinders for both valves using a feeler gauge.

VALVE CLEARANCE

IN: 0.16 ± 0.02 mm (0.006 ± 0.001 in)



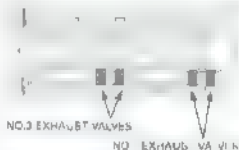
Turn the crankshaft clockwise 1/2 turn (180°) align the index line on the ignition pulse generator rotor so that it is facing up as shown.



Check the valve clearance for the No. 1 and No. 3 cylinder exhaust valves using a feeler gauge.

VALVE CLEARANCE

EX: 0.26 ± 0.02 mm (0.010 ± 0.001 in)



ADJUSTMENT

Remove the camshaft (page 3-11)

Remove the valve lifters and shims



- Shim may stick in the inside of the valve lifter. Do not abuse the shim by pulling it out abruptly. Mark a valve lifter and shim for precise reassembly.
- The valve lifter can be easily removed with a valve spring compressor.
- The shim can be easily removed with a screwdriver or pry bar.

Clean the valve shim contact area in the valve lifter with compressed air.



5. Any two different
mm 1 2 3 4 5 6 7 8 9 10
mm 1 2 3 4 5 6 7 8 9 10
mm 1 2 3 4 5 6 7 8 9 10

Measure the shim thickness and record it.

Calculate the new shim thickness using the equation below.

$$A - B + C = D$$

A: New shim thickness

B: Old shim thickness

C: Specified valve clearance

D: New shim thickness

- Make sure of the correct shim thickness by measuring the shim by micrometer.
- Replace the valve seat if carbon deposit build up is calculated dimension of over 2.000 mm.

Install the newly selected shim on the valve rocker.
Apply molybdenum disulfide oil on the shim after it.
Install the valve stem into the valve lifter tubes.

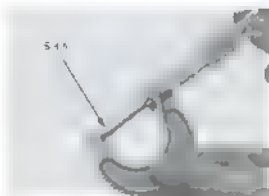
Install the camshaft (page B-220).

Rotate the camshaft by rotating the crankshaft clock wise several times.
Recheck the valve clearance.

Remove the cam chain tensioner stopper tool.

Install the new sealing washer and turn them clockwise (from timing belt).
Tighten the bolt securely.

Install the removed parts in the reverse order of removal.



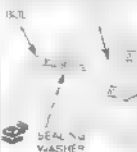
100	102	104	106
1.00 mm	1.02 mm	1.04 mm	1.06 mm

Install the shim
and also keep it
flat against
washers

3. CRANKSHAFT



1. CRANKSHAFT TENSIONER AFTER



ENGINE OIL/OIL FILTER

OIL LEVEL INSPECTION

Start the engine and let it idle for 2 - 3 minutes.
Turn off the engine and support the motorcycle level
surface.

Check the oil level through the inspection window.

If the level is below the lower line, remove the oil filler cap and fill the crankcase with recommended oil up to the upper level line.

Repeat the oil level check.

Fill the recommended engine oil up to the upper level line.

RECOMMENDED ENGINE OIL

Products GN4 or 4PA without molybdenum additives 4 stroke oil JSA & Castrol or Motul.
And also oil (Canada only) or an equivalent motor oil API service classification S4 or higher except oils dilution at energy conserving oil the API service level.
JASO 1003 or similar M&A
Viscosity: SAE 10W-40

Reinstall the filler cap.

ENGINE OIL & FILTER CHANGE

Warm up the engine.

Stop the engine and remove the oil filler cap.

Remove the drain bolt, drain the oil completely.

Check that the sealing washer on the drain bolt is in

good condition, and replace if necessary.
Install and tighten the drain bolt.

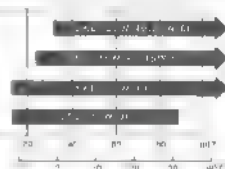
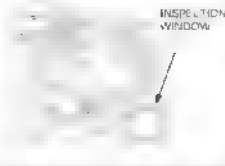
TORQUE: 28 Nm (2.0 lbf-ft), 22 in-lb)

Remove old filter and change it to a new one.
Install the

TOOL

D8 filter wrench

07HAA-FJ70100



Apply clean engine oil to the new oil filter O-ring.

Install the new oil filter and tighten it to the specified torque.

TDDI

Oil filter wrench

D75HAA-PJTD100

TORQUE 28 N·m (2.1 kgf-m, 20 lbf-ft)

Fill the crankcase with recommended engine oil.

OIL CAPACITY

3.5 ltr. 3.7 U.S. qt. (3.7 imp. qt. after draining)

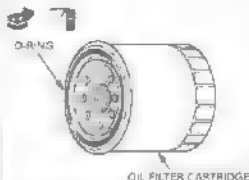
3.6 liter 3.8 U.S. qt. 3.2 imp. qt. after draining (After change)

Install the **oil filter**.

Start the engine and let it idle for 3 minutes.

Check the oil level and top up if necessary.

Make sure to check the **oil level**.



ENGINE IDLE SPEED

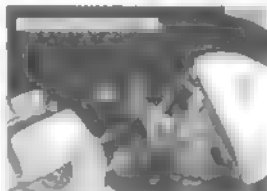
Open and support the front end of fuel tank (page 2-4).

- Measure and adjust the **idle speed** after all the engine maintenance work has been completed, and after the **oil filter** is installed.
- The engine must be warm for accurate idle speed inspection and adjustment.

Warm up the engine for about ten minutes.

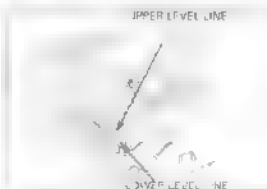
Turn the throttle stop screw as required to obtain the specified idle speed.

IDLE SPEED 1,500 ± 100 min./rpm.



RADIATOR COOLANT

Check the coolant level of the reserve can with the engine running at normal operating temperature. The level is between the "HOT" and "COLD" level marks.

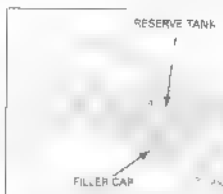


If necessary, add recommended coolant.

RECOMMENDED ANTIFREEZE

Pro Honda Coolant or an equivalent high quality ethylene glycol antifreeze containing corrosion protection inhibitors specifically recommended for use in aluminum engines.

Remove the reserve tank filler cap and fill to the "UPPER" level line with a 50/50 mixture of distilled water and antifreeze.
Retighten the filler cap.



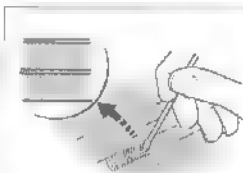
COOLING SYSTEM

Remove the lower cowl and inner half cowl (page 2-4).

Check the radiator air passages for clogging or dirt.

Straighten bent fins, and remove insects, mud, or debris with a wire with compressed air or low water pressure.

Replace the radiator if the air flow is obstructed by more than 20% of the radiating surface.



Inspect the radiator hoses for cracks or deterioration, or replace as necessary.

Check the tightness of all hose clamps and fasteners.



SECONDARY AIR SUPPLY SYSTEM

- This model is equipped with a built-in secondary air supply system. The pump/solenoid valve assembly is located under the cylinder head cover.
- The secondary air supply system provides heated air that enters the cylinders from the secondary air solenoid valve. The valve is controlled by the engine's negative pressure pulse. The exhaust system has a high-pressure solenoid valve that controls the flow of air into the engine. The high-pressure solenoid valve is controlled by the engine's negative pressure pulse. The high-pressure solenoid valve is controlled by the engine's negative pressure pulse.

Check the PAIR (pump/solenoid valve) assembly between the PAIR and the cylinder head cover for damage or leakage. Make sure that the hoses are not clogged.

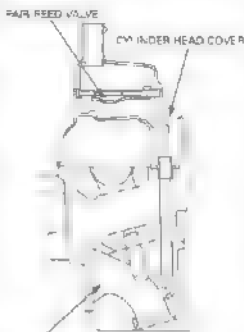


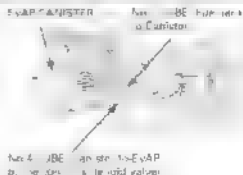
FIGURE 3-10

Check the PAIR (pump/solenoid valve) assembly between the PAIR and the cylinder head cover for damage or leakage. Make sure that the hoses are not clogged.



EVAPORATIVE EMISSION CONTROL SYSTEM (California type only)

Check the evaporative emission (EVAP) canister for cracks or damage.

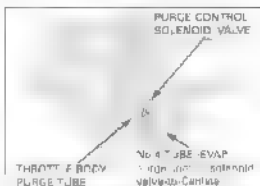


Check the tubes between the fuel tank, EVAP canister, EVAP purge control valve and throttle body for deterioration, damage or loose connections. Also check that the tubes are not kinked or pinched.

Refer to the Vacuum Hose Routing Diagram Label and Cable & Harness Routing (page 3-27) for tube connections and routing.

Check the air suction hose between the air cleaner housing and AIR control solenoid valve for deterioration, damage or loose connections.

Make sure that the hoses are not kinked, pinched or cracked.



DRIVE CHAIN

DRIVE CHAIN SLACK INSPECTION

Turn the ignition switch OFF, place the motorcycle on the side stand and shift the transmission into neutral. Check the slack in the drive chain lower run midway between the sprockets.

CHAIN SLACK: 30 - 40 mm (1.2 - 1.6 in)

NOTICE

Excessive chain slack (60 mm (2.0 in) or more) may damage the frame.



ADJUSTMENT

Loosen the rear gear nut.

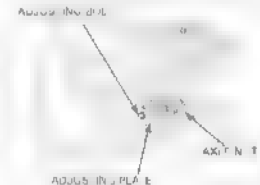
Turn both adjusting bolts so the correct drive chain slack is obtained.

Make sure the index marks on both adjusting plate are aligned with the end of the swingarm.

Tighten the rear axle nut to the specified torque.

TORQUE: 85 N·m (8.5 kgf·m, 63 lbf·ft)

Recheck the drive chain slack and free wheel rotation.



Lubricate the drive chain with #60 - 90 gear oil or drive chain lubricant designed specifically for use with O-ring chains. Wipe off the excess O-ring chain lubricant.

Check the drive chain wear indicator label attached on the left drive chain adjusting plate.

If the swingarm index mark reaches the red zone of the indicator label, replace the drive chain with a new one. (page 3-21)



CLEANING AND LUBRICATION

Clean the chain with non-flammable or high flash point solvent and wipe dry.

Be sure the chain has dried completely before lubricating.

Inspect the drive chain for possible damage or wear. Replace any chain that has damaged rollers, loose fitting links or excessive sprocket wear. Reinstalling a new chain is described in the chapter on Chain and Sprockets.

Inspect and replace sprocket as necessary.

Lubricate the drive chain with 900-80 gear oil or drive chain lubricant designed specifically for use with O-ring chains. Wipe off the excess oil or chain lubricant.

NON-FLAMMABLE OR HIGH FLASH POINT SOLVENT

CHAIN

WIPE AND DRY

SOFT RAG

LUBRICATE

900-80 GEAR OIL OR DRIVE CHAIN LUBRICANT

SPROCKET INSPECTION

Inspect the chain and sprocket for wear and damage. Replace as necessary.

Chain and sprocket must be in good condition. If the new replacement chain will wear rapidly.

WEAR

DAMAGE

NORMAL

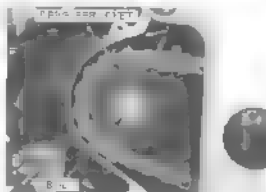
Check for excessive play and ruts on the drive and driven sprockets.

They are loose, tighten them.

TORQUE

Drive sprocket bolt: 54 N-m (55 kg-m, 40 lb-ft)

Driven sprocket nut: 30 N-m (3.1 kg-m, 22 lb-ft)



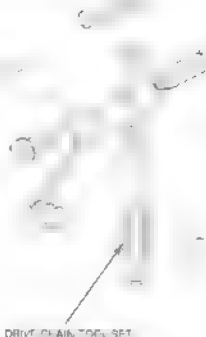
REPLACEMENT

This motorcycle uses a drive chain with a sliding master link.
Loosen the drive chain (page 3-18).
Assemble the special tool as shown.

TOOL

Drive chain tool set

0718MH-MR10103



When using the special tool set, follow the manual for the motorcycle repair shop.

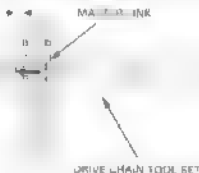
Locate the pinned pin end of the master link from the outside of the chain, and remove the link with the drive chain tool set.

TOOL

Drive chain tool set

0718MH-MR10103

Removes the drive chain.



Remove the master link.

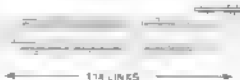
Remove the excess drive chain links from the new drive chain with the drive chain tool set.

STANDARD LINKS: 114 links

REPLACEMENT CHAIN

DIO D05JVA8 114LE

PK P050HFOZS-114LE

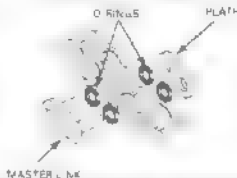


Never remove the old drive chain master link or master link pins at once.
Assemble the new master link using an anvil plate.

Assemble and set the drive chain tool set.

TOOL

Drive chain tool set 07H9VH-MER10103



Make sure that the master link pins are inserted correctly.
Measure the master link pin length provided from the plate.

STANDARD LENGTH

DIO: 115 118 mm (4.53 - 4.64 in.)

RK: 113 - 114 mm (4.45 - 4.49 in.)

Replace the master link pins.



Make sure that the push pin diameter is correct by measuring the diameter of the stacked area using a slide caliper.

DIAMETER OF THE STACKED AREA

DIO: 5.80 - 5.88 mm (0.229 - 0.231 in.)

RK: 5.85 - 5.88 mm (0.230 - 0.231 in.)



After stacking, check the stacked condition of the master link pins.

If there is any cracking, replace the master link, O-rings and plate.



CRACKED

DRIVE CHAIN GUIDE PLATE INSPECTION

Remove the drive sprocket guard or guide plate.

Check the drive chain guide plate for wear or damage and replace if necessary.



BRAKE FLUID

NOTE:

- Do not mix different types of fluid as they are not compatible with each other.
- Do not use a mixture of old and new fluid. The system will fill with a mixture.
- Always fill the system gradually. Do not pump the fluid. Place a new seal on the master cylinder if the system is new.

When the fluid level is low, check the brake pads for wear (see next page). A low fluid level may be due to wear of the brake pads. If the brake pads are worn, the caliper piston is pushed out, and this accounts for a low master cylinder. If the brake pads are not worn and the fluid level is low, check the system for leaks (see next page).

FRONT BRAKE

Turn the handlebar so that the reservoir is level and check the front brake fluid reservoir level. If the level is near the lower level, the check the brake pads (see below).

LOWER LEVEL LINE

REAR BRAKE

Place the motorcycle on a level surface and support it in an upright position.

Check the rear brake fluid reservoir level.

If the level is near the lower level, the check the brake pad wear (see below).

LOWER LEVEL LINE

BRAKE PAD WEAR

FRONT BRAKE PADS

Check the brake pad for wear.
Replace the brake pads if either pad is worn to the bottom of the wear limit groove.

Refer to page 16-7 for brake pad replacement.

WEAR LIMIT GROOVE



REAR BRAKE PADS

Check the brake pad for wear.
Replace the brake pads if either pad is worn to the bottom of the wear limit groove.

Refer to page 16-8 for brake pad replacement.

WEAR LIMIT GROOVE



BRAKE SYSTEM

INSPECTION

Firmly apply the brake lever to verify that the brake system is working.
If the brake pedal feels soft or spongy when depressed, bleed the air from the system.

Inspect the brake hose and fittings for deterioration, leakage, and sagging.
Replace hoses and fittings as required.

Refer to page 16-5 for brake bleeding procedures.

BRAKE LEVER ADJUSTMENT

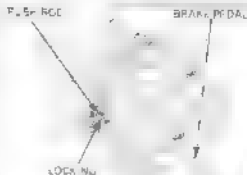
The distance between the end of the brake lever and the grip can be adjusted by turning the adjuster.

ADJUSTER



BRAKE PEDAL HEIGHT ADJUSTMENT

Loosen the lock nut and turn the push rod until the correct pedal height is obtained.



BRAKE LIGHT SWITCH



Adjust the brake light switch so that the brake light comes on just prior to the brake assembly being engaged.

If the light fails to come on, adjust the switch so that the light comes on at the proper time. Hold the switch body and turn the adjuster. Do not turn the switch body.



HEADLIGHT AIM



Place the motorcycle on a level surface.

Adjust the headlight beam vertically by loosening the headlight mount bolts.

HEADLIGHT

Adjust the headlight beam horizontally by turning the horizontal beam adjusting screw.

A clockwise turn increases the beam angle. The more the beam angle, the further the beam is from the center.

HORIZONTAL BEAM ADJUSTING SCREW

CLUTCH SYSTEM

Measure the clutch lever free play at the end of the clutch lever.

FREE PLAY 10 – 20 mm (3/8 – 13/16 in)

10 – 20 mm (3/8 – 13/16 in)



Minor adjustments are made using the upper adjuster at the clutch lever.

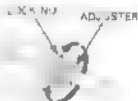
Loosen the lock nut and turn the adjuster.

NOTICE

The adjuster may be damaged if it is positioned too far out, leaving minimal thread engagement.

If the adjuster is threaded out near its end and the correct free play cannot be obtained, turn the adjuster all the way in and back out one turn.

Tighten the lock nut and make a major adjustment as described below.



Major adjustments are performed at the clutch arm. Loosen the lock nut and turn the adjusting nut to adjust free play.

Hold the adjusting nut securely while tightening the lock nut.

If proper free play cannot be obtained, at the clutch shop during a belt ride, disassemble and inspect the clutch (see section 9).



SIDE STAND

Support the motorcycle on a level surface.

Check the side stand spring for damage or loss of tension.

Check the side stand assembly for freedom of movement and lubricate the side stand pivot if necessary.

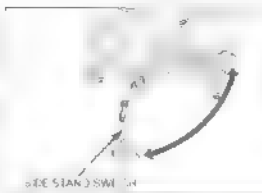
Check the side stand ignition cut-off system.

- Sit beside the motorcycle and raise the side stand. Set the engine with the transmission in neutral and shift the clutch lever to disengage the clutch. Push the side stand switch down.

When the side stand is down:

The engine should stop if the side stand is down.

If there is a problem with the system, check the side stand switch section (8).



SIDE STAND SWITCH



SUSPENSION

FRONT SUSPENSION INSPECTION

Check the action of the forks by compressing the front suspension several times.

Check the entire fork assembly for signs of wear, damage or loose fasteners.

Replace damaged components that cannot be repaired.

Tighten all nuts and bolts (page 3-12).

Refer to section 13 for fork service.



REAR SUSPENSION INSPECTION

Check the action of the shock absorber by compressing it several times.

Check the entire shock absorber assembly for signs of wear, damage or loose fasteners.

Replace damaged components that cannot be repaired.

Tighten all nuts and bolts (page 3-12).

Place the motorcycle on a wire stand or lay it on its side. Wheel it to a level surface and secure the motorcycle securely. Check for worn swingarm bearings by grabbing the swingarm and attempting to move the wheel side to side. Replace the bearings if any loose movement is noted.



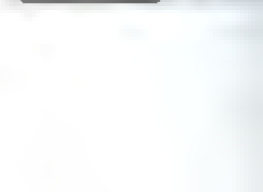
Refer to section 14 for shock absorber and swingarm service



REAR SUSPENSION ADJUSTMENT

SPRING PRE-LOAD ADJUSTER

Spring preload can be adjusted by turning the adjuster using a pin spanner



NUTS, BOLTS, FASTENERS

Check that all engine and chassis bolts are tightened to the correct torque values in N 2

Check that all safety line hose clamps and cabin stays are in place and properly secured

WHEELS/TIRES

NOTICE

The wheels should be checked when the bike is cold

RECOMMENDED TIRE PRESSURE AND TIRE SIZE

	FRONT	REAR
Tire pressure		
kPa (kg/cm ² psi)	250 (2.50, 36)	280 (2.80, 42)
Tire size	120/70 ZR 17 (57W)	180/55 ZR 17 (73W)
	120/70 ZR 17 (57W)	180/55 ZR 17 (73W)
Tire brand	Edgeworks BT66F RADIAL	Edgeworks RADIAL G
Max. vel.	TX15	TX25



MAINTENANCE

Check the tires for cuts, embedded nails, or other damage.

Check the front and rear wheels for freewheel; refer to section 13 and 14.

Measure the tread depth at the center of the tire.
Replace the tires when the tread depth reaches the following limits.

MINIMUM TREAD DEPTH

FRONT 1.6 mm (0.06 in)

REAR 3.0 mm (0.08 in)

STEERING HEAD BEARINGS

Check that the control cables do not interfere with the handle rotation.

Support the motorcycle securely and raise the front wheel off the ground.

Check that the handlebar moves freely from side to side.

If the handlebar moves unevenly, binds, or has vertical movement, inspect the steering head bearings (section 10).



4. LUBRICATION SYSTEM

LUBRICATION SYSTEM DIAGRAM	4-0	OIL STRAINER/PRESSURE RELIEF VALVE	4-3
SERVICE INFORMATION	4-1	OIL PUMP	4-5
TROUBLESHOOTING	4-2	OIL COOLER	4-8
OIL PRESSURE INSPECTION	4-3		

SERVICE INFORMATION

▲ CAUTION

אנחנו מודים לך על כל המאמץ והעזרה שאתה נותן לנו. אנחנו מודים לך על כל המאמץ והעזרה שאתה נותן לנו.

The oil pump can be serviced with the engine installed in the frame.

^a The values are means ± SD.

When removing any of the following items, please check the appropriate box.

11

[illegible]

SPECIFICATIONS

ITEM	STANDARD	SERVICE LIMIT
Engine oil capacity	After draining 4.6L at 100 km/h or stage After 100 km/h	5.0L 4.8L (max) 4.6L (9 qt) (3.9 imp qt)
Recommended engine oil	API Service Classification SAE 15W-40 or higher except oils labeled as energy conserving on the API service label JASO MA or JASO MA2 Viscosity SAE 15W-40	—
Oil pressure at 2500 rpm	3.0-4.0 bar (43.5-57.9 psi) 0.000 mmHg (0.000 inHg)	+ 0.20 bar (2.9 psi) - 0.10 bar (-1.5 psi)
Oil pressure at 2500 rpm	3.0-4.0 bar (43.5-57.9 psi) 0.000 mmHg (0.000 inHg)	+ 0.20 bar (2.9 psi) - 0.10 bar (-1.5 psi)
Oil pressure at 2500 rpm	3.0-4.0 bar (43.5-57.9 psi) 0.000 mmHg (0.000 inHg)	+ 0.20 bar (2.9 psi) - 0.10 bar (-1.5 psi)

TORQUE VALUES

Oil engine battery cooling bolt (20 mm)	26 Nm (2.3 kgfcm) 20 lb-ft	Apply locking agent to the flange (CT bolt)
Oil pump cover bolt	10 Nm (0.9 kgfcm) 5.8 lb-ft	Apply to the flange and flange surface
Oil cooler bolt (finger boss)	54 Nm (4.6 kgfcm) 40 lb-ft	Apply to the flange and flange surface and O-ring
Engine oil filler cartridge	26 Nm (2.3 kgfcm) 20 lb-ft	
Engine oil drain bolt	38 Nm (3.0 kgfcm) 27 lb-ft	

TOOLS

- Oil pressure gauge set
- Oil pressure gauge attachment
- Oil filter wrench

07504-30-0000
0.5 x 4 x 3.0
07504-30-0000

Equivalent not commercially available in U.S.A.
Equivalent not commercially available in U.S.A.

TROUBLESHOOTING

Oil level too low

- Oil leakage
- Excessive oil spill
- Valve stem oil leak
- Improperly installed piston rings
- Worn cylinders
- Worn stem seals
- Worn valve guide

Low oil pressure

- Oil level low
- Clogged oil strainer
- Faulty oil pump
- Incorrect oil
- Incorrect oil being used

No oil pressure

- Oil level too low
- Oil pressure relief valve stuck open
- Broken oil pump drive chain
- Broken oil pump drive or driven sprocket
- Worn oil pump
- Internal oil leak

High oil pressure

- Oil pressure relief valve stuck closed
- Clogged oil filter gallery or metering orifice
- Incorrect oil being used

Oil contamination

- Oil not oil changed often enough
- Worn piston rings

Oil emulsification

- Blown cylinder head gasket
- Leaky coolant passage
- Excess water

OIL PRESSURE INSPECTION

At the oil pressure



Check the oil level (page 3-6).

Warm up the engine and run at operating temperature (page 3-10). After 5 minutes.

Stop the engine and remove the main gas very seal ring bolt.



Connect an oil pressure gauge and attachment to the oil gallery.

TOOLS

Oil pressure gauge set 07586-3000000
(Equivalent commercially available in U.S.A.)Oil pressure gauge attachment
07510-0000000
(Equivalent commercially available in U.S.A.)

Start the engine and increase the rpm in 8000 min (rpm) and read the oil pressure.

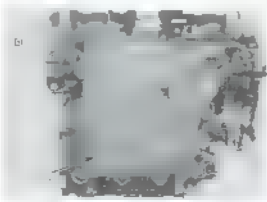
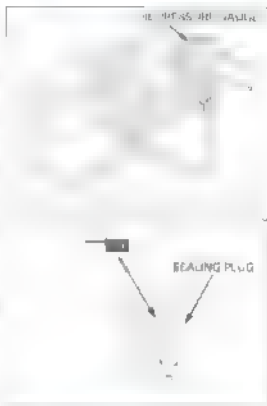
OIL PRESSURE

450 kPa (3.0 kgf/cm²) 71 psi at 5000 min (rpm)
min 0.15 MPa

Stop the engine and remove the tools.

Apply a sealing agent to the sealing plug threads. Install and tighten the sealing plug in the section torque.

TORQUE 20 N·m (3.6 kgf-m) 27 lbf-ft



OIL STRAINER/PRESSURE RELIEF VALVE

REMOVAL

Drain the engine oil (page 3-7).

Remove the exhaust pipe (page 3-8).

Remove the oil pan flange bolts and oil pan.

LUBRICATION SYSTEM

Remove the 2432 to allow the

oil to drain from the pump.

Remove the 2432 to allow the

oil to drain from the pump.

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oil to drain from the pump.

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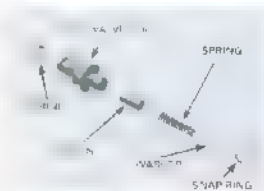
oil to drain from the pump.

Remove the 2432 to allow the

oil to drain from the pump.

Remove the 2432 to allow the

oil to drain from the pump.



INSTALLATION

Apply a thin layer of packing material to the

oil pump.

Install the oil pump in the engine and seal it

to its base with the procedure in this manual.

Install the oil pump in the engine and seal it

to its base with the procedure in this manual.

Install the oil pump in the engine and seal it

to its base with the procedure in this manual.

Apply oil to the new C ring and install it onto the relief valve.
Install the relief valve into the crankcase.



Clean the oil pan mating surface thoroughly.
Apply Three Bond 1207B or an equivalent to the mating surface.



Install the oil pan onto the lower crank case.
Tighten the all bolts in a crisscross pattern.
Check.



Install the exhaust pipe (page 27).
Fill the crankcase with recommended oil (page 24).

After installation, check that there are no oil leaks.



OIL PUMP

REMOVAL

Remove the clutch and oil pump driven sprocket (page 28).

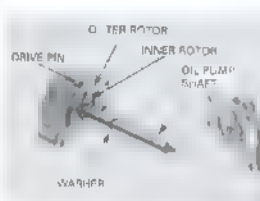
Remove the three flange bolts and oil pump assembly.

DISASSEMBLY

Remove the drive pins.

Remove the oil pump cover bolt and oil pump cover.

Remove the thrust washer, drive pin, oil pump shaft, outer rotor and inner rotor from the oil pump body.



INSPECTION

Measure the rotor tip clearance.



Temporarily install the oil pump shaft, install the outer and inner rotors into the oil pump body.

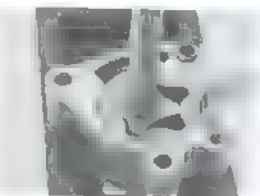
Measure the rotor tip clearance.

SERVICE LIMIT 0.20 mm (0.008 in)



Measure the pump body clearance.

SERVICE LIMIT 0.25 mm (0.01 in)

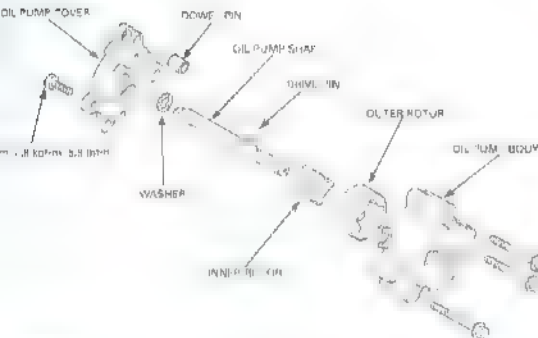


Measure the side clearance using a .001 inch edge rule.
 .001 inch

SERVICE LIMIT 0.10 mm (.004 in)

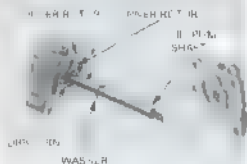


ASSEMBLY



Install the outer rotor into the oil pump body with its lock tabs facing the oil pump cover.
 Install the inner rotor into the outer rotor with its drive pin grooves facing the oil pump cover.
 Install the oil pump shaft through the inner rotor and oil pump body.

Install the drive pin into the hole in the pump shaft and align the pin with the groove in the inner rotor as shown.
 Install the thrust washer.
 Install the dowel pin.

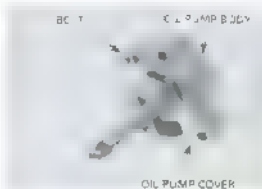


Install the oil pump cover and tighten the bolt to the specified torque.

TORQUE ■ Bolt: 18.9 kgf-m, 5.8 lbf-ft

Check the oil pump operation by turning the pump shaft.

• If necessary, reassemble the oil pump.



INSTALLATION

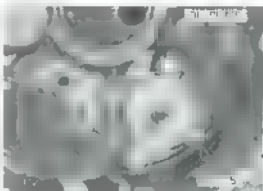
Install the oil pump onto the crankcase while aligning the pump shaft up with the water pump shaft groove by turning the oil pump shaft.



Install and tighten the three flange bolt securely.

Install the push assembly (page 9-10).

After installation, fill the crankcase with the specified oil (page 3-11) and the thermostat (page 3-12).
Check the oil pressure (page 4-5).



OIL COOLER

REMOVAL

Drain the engine oil and remove it as described (page 3-12).

Drain the coolant from the system (page 6-4).

Loosen the hose clamps and disconnect the oil cooler water hoses from the cooler.



Remove the oil cooler bolt, inner bore washer and O-ring.

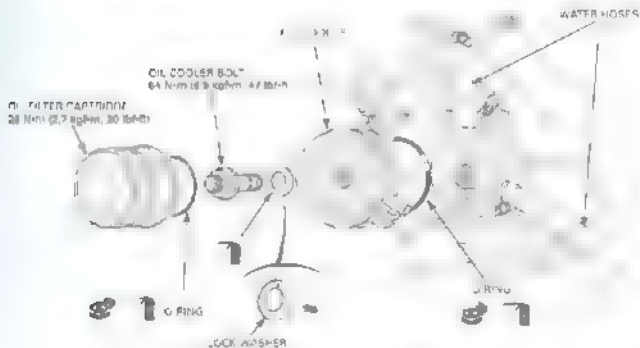
Remove the O-ring from the oil cooler.

INSPECTION

Check the oil cooler for damage.



INSTALLATION



Coat the O-ring with engine oil and install it into the oil cooler groove.

Insert the oil cooler, fitting its guide groove with the lug on the crankcase.



LUBRICATION SYSTEM

Apply oil to the fuel injector for 4 to make a good sealing surface.
Install the lock washer and oil cooler bolt.



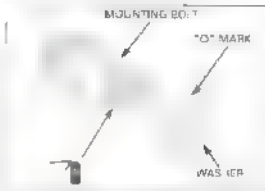
Tighten the oil cooler bolt to the specified torque.

TORQUE: 44 N-m (32.5 lbf-m), 67 lbf-ft



Connect the oil cooler water hoses, tighten the hose
hangers securely.

Install the oil filter cartridge and fill the crankcase with
recommended oil (page 3-21).
Fill the cooling system and bleed air (page 5-4).



22N·m 2.2 kgf·m 6 lbf·ft

22N·m 2.2 kgf·m 6 lbf·ft

TORQUE VALUES

Throttle body screws

Throttle body insulator band screws

Star valve drive screws

Star valve nut

Throttle linkage nut and throttle

Throttle cable nut and throttle

Fuel tube retaining nut (throttle body side)

Fuel tube retaining nut

25 Nm (2.3 kgf-m) 7 lb-ft

See page 1-74

4 0.25 kgf-m 0.75 lb-ft

2 4 0.35 kgf-m 1 lb-ft

4 0.35 kgf-m 1 lb-ft

22 Nm (2.3 kgf-m) 16 lb-ft

2 25 Nm (2.3 kgf-m) 18 lb-ft

See page 4-4 for adjustment and check

TOOLS

Fuel pressure gauge

Fuel voltage tester (D.S.A. only or

fuel voltage tester)

250 mm (10 in)

87406-0C4000

01 07406-004002

03406-0C4000 03406-0C4000 03406-0C4000 03406-0C4000

03406-0C4000 03406-0C4000 03406-0C4000 03406-0C4000

03406-0C4000 03406-0C4000

03406-0C4000

TROUBLESHOOTING

Engine won't start

Check oil level

Check air intake system

• Pinched or clogged fuel tube

Faulty fuel pump

• Clogged fuel filter

• Clogged fuel injection filter

• Sticking fuel injector needle

• Faulty fuel pump operating system

Engine starts, hard to start, rough idling

• Intake air leak

• Air contaminated, deteriorated

• Pinched or clogged fuel tube

• Idle speed misadjusted

• Starter valve synchronization misadjusted

Backfiring or misfiring during acceleration

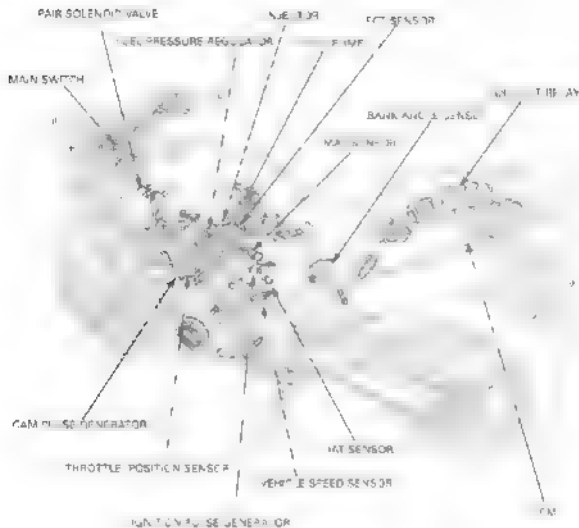
• Ignition system malfunction

Poor performance (drivability) and poor fuel economy

• Air filter clogged

• Faulty pressure regulator

SYSTEM LOCATION



FUEL NAME	ABBREVIATIONS
Propane	MA
Gasoline	MA
Alcohol	MA
Water	MA
Oil	MA
Antifreeze	MA
Brake fluid	MA
Transmission fluid	MA
Power steering fluid	MA
Engine oil	MA

SYSTEM DIAGRAM



- (1) Engine stop relay
- (2) PGM-FI fuse (20A)
- (3) Engine stop switch
- (4) Sub-fuse (10A)
- (5) Ignition switch
- (6) Master fuse (30A)
- (7) Bank angle sensor
- (8) Air pressure (PSI)
- (9) Battery
- (10) Air pressure (PSI)
- (11) Ignition pulse generator
- (12) PRR solenoid valve
- (13) TP sensor
- (14) MAP sensor
- (15) Injector
- (16) Cam pulse generator
- (17) Air check valve
- (18) ECT sensor

- (19) Ignition pulse generator
- (20) Fuel cut relay
- (21) Fuel pump
- (22) Vehicle speed sensor
- (23) Clutch switch
- (24) Side stand switch
- (25) Malfunction indicator lamp (MIL)
- (26) Service check connector
- (27) Tachometer
- (28) Air check solenoid valve
- (29) One-way valve
- (30) Check valve
- (31) EVAP purge control solenoid valve (California type only)
- (32) CVS control (California type only)

PGM-FI (PROGRAMMED FUEL INJECTION) SYSTEM

SELF-DIAGNOSTIC PROCEDURES

Place the motorcycle on its side stand.
Start the engine and let it idle.

If the malfunction indicator blinks, note how many times the MIL flashes and take note the cause of the problem (page 6-10 through 6-40).

If the system is not malfunctioning, the MIL indicator lamp will not light or blink.

If you wish to read the PGM-FI memory for trouble data, perform the following to read the stored problem data.

To read the stored problem data:

Turn the ignition switch OFF.

Remove the seat (page 2-2).

Short the PGM-FI system service check connector for 10 seconds using a jumper wire.

INDICATOR LAMP



IGNITION SW

SERVICE CHECK CONNECTOR



Turn the ignition switch ON and engine stop switch to RUN.

IGNITION SWITCH

If the ECM has no self diagnosis memory data, the MIL will illuminate when you turn the ignition switch ON.

If the ECM has self diagnosis memory data, the MIL will start blinking when you turn the ignition switch ON.

Note how many times the MIL blinks, and determine the cause of the problem (page 5-15 through 5-28).

INDICATOR LAMP

SELF-DIAGNOSIS RESET PROCEDURE

1. Turn the engine stop switch to RUN and ignition switch OFF.
2. Short the service check connector of the PGM-FI system using a jumper wire.
3. Turn the ignition switch ON.
4. Remove the jumper wire from the service check connector.
5. The MIL light is for about 5 seconds. While the indicator lights, short the service check connector again with the jumper wire. Self diagnosis memory data is erased, if the MIL turns off and starts blinking.

- The service check connector must be jumped while the indicator lights. If not, the MIL will not start blinking.
- Note that the self diagnosis memory data cannot be erased if you turn off the ignition switch before the MIL starts blinking.

If the MIL blinks 20 times, the data has not been erased, so try again.

SERVICE CHECK CONNECTOR

JUMPER WIRE

INDICATOR LAMP

PEAK VOLTAGE INSPECTION PROCEDURE

- Use this procedure for the gasoline pulse generator and cam pulse generator inspection.
- Use it at idle, crank or before respectively. If the system is not operating, it is not safe to use the peak voltage adapter.
- Check the meter and the adapter. Check that the meter display is 0.00 volts.
- Connect the 22P to the ECM 22P light gray connector.
- If the meter displays more than 0.25 volts at idle or crank or before start, the display value differs depending upon the meter.
- Disconnect the fuel pump connector before checking the peak voltage.

Open and support the front end of fuel tank (page 7-4)

Disconnect the fuel tank connector (page 7-4)

Connect the peak voltage adapter to the digital multimeter.

TOOLS

Peak voltage tester (U.S.A. only) or
Peak voltage adapter 01103-00200
(not available in U.S.A. with commercially available digital multimeter (impedance 10 MΩ DCV minimum))

TEST HARNESS CONNECTION

- Remove the rear cover (page 2-2)
- Remove the two bolts from the rear leader.

Disconnect the ECM 22P (Black) and 22P (light gray) connectors from the line.

FUEL PUMP ONE TUR

DIGITAL MULTIMETER

V

PEAK VOLTAGE ADAPTER

22P (BLACK) CONNECTOR

ECM

22P (LIGHT GRAY) CONNECTOR

22P (BLACK) CONNECTOR

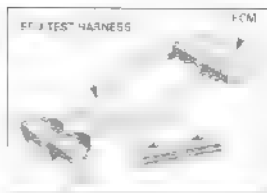
ECM

22P (LIGHT GRAY) CONNECTOR

Under the hood, use harnesses between the ECM and the wire harness and the (CA).

TOOL ECU test harness

97VMAZ-0010100
(New required)



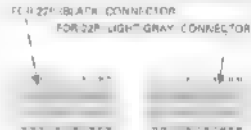
TEST HARNESS TERMINAL LAYOUT

The ECM connector terminals are numbered as shown in the illustration.

VIEW FROM WIRE HARNESS SIDE:



The test harness terminals are color coded as for the ECM connector terminals as shown.



PGM-FI SELF-DIAGNOSIS MALFUNCTION INDICATOR LAMP (MIL) FAILURE CODES

- PGM-FI MIL denotes the failure codes (the number of blinks from 1 to 33). When the indicator lights for 1.3 seconds it is equivalent to one blink. For example, a 1.9-second illumination and a 0.2-second blink will denote 1.5 seconds of the indicator lighting. 2 blinks. Follow code 12 on page 5-26.
- When more than one failure occurs, the MIL shows the blinks in the order of lowest number to highest number. An example of the indicator blinks more than two times: two failures have occurred. Follow codes 1 and 2 on page 5-17.

Number of PGM-FI MIL blinks	Causes	Symptoms Fail-safe operation	Refer to page
0	<ul style="list-style-type: none"> Open circuit in the power input wire to the ECM Faulty bank angle sensor Open circuit in bank angle sensor related circuit Faulty engine stop relay Open circuit in engine stop relay master wires Open circuit in engine stop switch related wiring Faulty engine stop switch Blow PGM-FI fuse 20 A Open circuit in engine stop switch ground Blow up fuse 10 A, 9 A or 8 A fuse Open circuit in MIL wire Faulty ECM 	<ul style="list-style-type: none"> Engine does not start Engine operates normally 	
No blinks	<ul style="list-style-type: none"> Short circuit in service check connector Faulty ECM Short circuit in service check connector wire 	<ul style="list-style-type: none"> Engine operates normally 	
1	<ul style="list-style-type: none"> Loose or poor contacts or MAP sensor connected Open or short circuit in MAP sensor wire Faulty MAP sensor 	<ul style="list-style-type: none"> Engine operates normally 	5-17
2	<ul style="list-style-type: none"> Loose or poor connection of the MAP sensor vacuum tube Faulty MAP sensor 	<ul style="list-style-type: none"> Engine operates normally 	5-14
7	<ul style="list-style-type: none"> Loose or poor connection of ECT sensor Open or short circuit in ECT sensor wire Faulty ECT sensor 	<ul style="list-style-type: none"> Malfunction of a fan operation (Simulate using numerical values: 40°C/104°F) 	5-16
8	<ul style="list-style-type: none"> Loose or poor connection of TP sensor connector Open or short circuit in TP sensor wire Faulty TP sensor 	<ul style="list-style-type: none"> Throttle plate operation when operated by the throttle cable (Simulate using numerical values: Throttle opens 7°) 	5-18
9	<ul style="list-style-type: none"> Loose or poor connection of IAT sensor Open or short circuit in IAT sensor wire Faulty IAT sensor 	<ul style="list-style-type: none"> Engine does not operate (Simulate using numerical values: 25°C/77°F) 	5-22

Number of PCM-F flash indicator blinks	Causes	Symptoms Engine condition	Reference page
1	<ul style="list-style-type: none"> • Loose or poor contact on vehicle speed sensor connector • Open or short circuit in vehicle speed sensor wire 	<ul style="list-style-type: none"> • Engine operates normally 	5-24
2	<ul style="list-style-type: none"> • Faulty vehicle speed sensor • Loose or poor contact on No.1 injector connector • Open or short circuit in No.1 injector wire 	<ul style="list-style-type: none"> • Engine does not start 	5-25
3	<ul style="list-style-type: none"> • Faulty No.1 injector • Loose or poor contact on No.2 injector connector • Open or short circuit in No.2 injector wire 	<ul style="list-style-type: none"> • Engine does not start 	5-26
4	<ul style="list-style-type: none"> • Faulty No.2 injector • Loose or poor contact on No.3 injector connector • Open or short circuit in No.3 injector wire 	<ul style="list-style-type: none"> • Engine does not start 	5-27
5	<ul style="list-style-type: none"> • Faulty No.3 injector • Loose or poor contact on No.4 injector connector • Open or short circuit in No.4 injector wire 	<ul style="list-style-type: none"> • Engine does not start 	5-28
6	<ul style="list-style-type: none"> • Faulty No.4 injector • Open or short circuit in cam pulse generator • Faulty cam pulse generator 	<ul style="list-style-type: none"> • Engine does not start 	5-29
7	<ul style="list-style-type: none"> • Loose or poor contact on ignition pulse generator connector • Open or short circuit in ignition pulse wire 	<ul style="list-style-type: none"> • Engine does not start 	5-30
8	<ul style="list-style-type: none"> • Faulty ignition pulse generator • Faulty ECU PROM in ECM 	<ul style="list-style-type: none"> • Engine operates normally • Does not hold the self-diagnosis data 	5-31

FUEL SYSTEM (Programmed Fuel Injection)

PGM-FI MIL 1 BLINK (MAP SENSOR)

Turn the ignition switch OFF.

Disconnect the MAP sensor 3P connector.
Check for loose or poor contact on the MAP sensor connector.



Connect the MAP sensor connector.
Place the motorcycle on its side stand.
Start the engine and check that the MIL blinks.

blinks

Turn the ignition switch OFF.

Disconnect the MAP sensor 3P connector.
Turn the ignition switch ON.
Measure the voltage at the wire harness side.



Connection: Yellow/Red (+) - Ground (-)
Standard: 4.75 - 5.25 V

Voltage exists

Measure the voltage between the connector at terminals of the wire harness side.



Connection: Yellow/Red (+) - Green/Orange (-)
Standard: 4.75 - 5.25 V

Voltage exists

No blinks

Check for poor contact on the MAP sensor connector.

Out of range

Check the Yellow/Red wire voltage at the ECM connector side.

Out of range

Check short circuit in green/orange wire loose or poor contact on the ECM connectors.

Measure the voltage between the terminals of the wire harness side.



Connection

Light green/Yellow (+) - Green/Orange (-)
Standard: 4.78 - 5.25 V

Voltage exists

If the ignition switch is OFF

Connect the MAP sensor 3P connector

MAP SENSOR
CONNECTOR



When the 3P connector is connected

Connect the voltmeter to ECM connector
turn the ignition switch ON
for 10 seconds



Measure the voltage of the air flow sensor
note: page 5-11

Connection B7 (+) B7 (-)

Standard: 2.7 - 3.1 V (766 mm Hg, 1,013 hPa)

Out of range

- Open or short circuit in light green-Yellow wire
- Loose or poor contact on the ECM connector

in range

Verify MAP sensor

Voltage exists

- Replace the ECM with a new one and inspect it again

FUEL SYSTEM (Programmed Fuel Injection)

PGM-FI M L 2 BLINKS (MAP SENSOR)

Turn the ignition switch OFF.

Disconnect the vacuum tube from the MAP sensor.

Connect the vacuum gauge between the manifold and the MAP sensor using a 3-way joint.
Start the engine and measure the manifold absolute pressure at idle speed.

Out of range

→ Check the tube installation



Standard: 200 - 250 mm Hg

Reconnect the vacuum tube to the MAP sensor.

MAP SENSOR
CONNECTOR



Disconnect the ECM connectors.
Connect the test harness to the ECM connector.

ECU TEST HARNESS



At the ignition switch ON
Measure the voltage at the test harness terminals (page 5-5)

Out of range → Faulty MAP sensor

V

Connection: B7 (+) - B1 (-)

Standard: 2.7 - 1.1 V 750 mm Hg/78.5 kPa

Voltage sensor

See the wiring

Measure the voltage at the test harness terminals (page 5-5)

Out of range → Faulty MAP sensor

V

Connection: B7 (+) - B1 (-)

Standard: 2.7 V engine on

Out of range → Replace the ECM with a new one, and adjust it again

FUEL SYSTEM (Programmed Fuel Injection)

PGM-FI MIL 7 BLINKS (ECT SENSOR)

Turn the ignition switch OFF.

Disconnect the ECT sensor 3P connector.
Check for loose or poor contact on the ECT sensor connector.

ECT SENSOR
CONNECTOR

Insert the ECT sensor connector.
Place the motorcycle on its side stand.
Turn the ignition switch ON.

ECT SENSOR
CONNECTOR

Check that the MIL blinks.

7 blinks

Turn the ignition switch OFF.
Disconnect the ECT sensor connector.
Measure the resistance at the ECT sensor connector.



Connection: Pink (+) Green/Orange (-)
(sensor side terminals)

Standard 25 ± 2 Ω @ 20°C (68°F)

Normal



Loose or poor contact on the ECT sensor connector

Abnormal → Faulty ECT sensor

Turn the ignition switch ON.

Measure the voltage between the ECT sensor extraction terminal of the wire harness side and ground.



Connection: Pink/White (+) - Ground (-)
Standard: 4.75 - 5.25 V

Voltage exists

Measure the voltage at the ECT sensor connector of the wire harness side.



Connection: Pink/White (+) - Green/Orange (-)
Standard: 4.75 - 5.25 V

Cut to range

- Open or short circuit in Pink and Pink/White wire
- Loose or poor contacts on the ECM connector

of 3.0V

- Open or short circuit in Green/Orange wire
- Loose or poor contacts on the ECM connector

Voltage exists

- Replace the ECU with a new one and inspect it again.

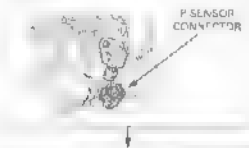
FUEL SYSTEM (Programmed Fuel Injection)

PGM-FI MIL 8 BLINKS (TP SENSOR)

Turn the ignition switch OFF

Disconnect the TP sensor 2P connector

Check for looser > poor contact on the TP sensor connector.



Connect the TP sensor connector

Place the motorcycle on its side stand

Start the engine and check that the MIL blinks



Turn the ignition switch OFF

Disconnect the TP sensor 2P connector

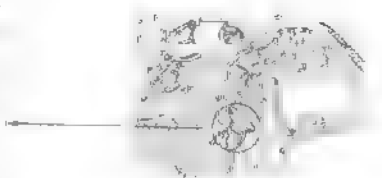
the ignition switch ON.

Measure the voltage between the wire harness side connector terminal and ground.



Connection: Yellow, Red + Ground
Standard: $4.75 \sim 5.25$ V

voltage exists



No blinks

• Loose or poor contact on the TP sensor connector

It blinks

• Open or short circuit in the Yellow/Red wire
• Loose or poor contact on the ECM connector

Measure the voltage at the TP sensor terminals with the wire harness side.

Out of range

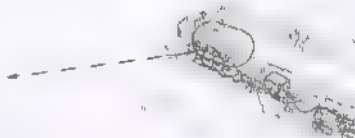
There is short circuit in green/orange wire loose or poor contact on the ECM connectors



Connection: Red/Yellow (+) - Green, Orange (-)
Standard: 4.75 - 5.25 V

voltage output

There is no voltage output OFF
Disconnect the ECM 24P connectors



Check for continuity between the TP sensor terminals with the wire harness side and ground

Continuity

= Short circuit in Red/Yellow wire



Connection: Red/Yellow (+) - Ground (-)
Standard: No continuity

No continuity

FUEL SYSTEM (Programmed Fuel Injection)

Connect the test harness to the ECM connector.

ECU TEST HARNESS



Check for continuity between the test harness terminal and the TP sensor connector terminal.

No continuity

→ Open circuit in Red/Yellow wire



Connection: Red/Yellow to

Standard: Continuity

Continuity

Connect the TP sensor to the connector.



With the ignition switch ON

Measure the voltage at the test harness terminals.

Normal

→ Recheck the ECM wiring harness and repeat if again



Connection: B8-4, A22-1-4

Standard: 0.4 - 0.5 V (throttle fully closed)

*4.2 - 4.8 V (throttle fully open)

Out of range

→ Faulty P sensor

A voltage marked " " refers to the value when the voltage read in at the TP sensor 3P connector (page 5-18) shows 5 V. When the reading always differs than 5 V, giving a voltage at the test terminals as follows:

In the case of a voltage of 4.75 V at the TP sensor 3P connector:

$$0.4 \times 4.75/5.0 = 0.38 \text{ V}$$

$$0.6 \times 4.75/5.0 = 0.57 \text{ V}$$

Thus, the solution is "0.38 - 0.57 V" with the throttle fully closed.

Replace 0.4 and 0.6 with 4.2 and 4.4 respectively in the above equations to determine the throttle fully open range.

FUEL SYSTEM (Programmed Fuel Injection)

PGM-FI MIL 9 BLINKS IAT SENSOR)

Turn the ignition switch OFF

Disconnect the IAT sensor 2P connector.
Check for loose or poor contact on the IAT sensor.

IAT SENSOR
CONNECTOR

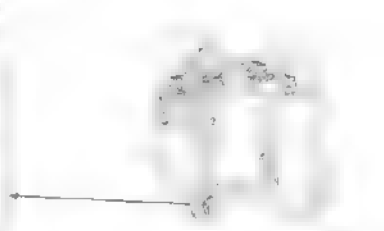
Connect the IAT sensor 2P connector.
Place the IAT sensor in a cold state.
↓
Blow air into the IAT sensor.
Check that the MIL blinks.

2 blinks
Ignition switch ON

Disconnect the IAT sensor 2P connector.
Measure the resistance of the IAT sensor at 20°C (68°F).

Standard: 2 ~ 4 k Ω

Turn the ignition switch ON



2 blinks
Ignition switch ON

Ignition switch ON

Ignition switch ON

Ignition switch ON

Ignition switch ON

Ignition switch ON

Ignition switch ON

Ignition switch ON

Ignition switch ON

Ignition switch ON

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Ignition switch ON

Ignition switch ON

Ignition switch ON

Measure the voltage between the terminals of the wiring harness side

Out of range

- Open or short circuit in Grey/Blue wire
- Loose or poor contact on the ECM connectors



Connection

Grey/Blue (+) - Ground (-)
Standard 4.75 - 5.25 V

Unit: 0.1 V

Measure the voltage between the terminals of the wiring harness side

Out of range

- Open or short circuit in Green/Orange wire
- Loose or poor contact on the ECM connectors



Connection

Grey/Blue (+) - Green/Orange (-)
Standard 4.75 - 5.25 V

Out of range

- Refer to the ECM wiring diagram and repair it again

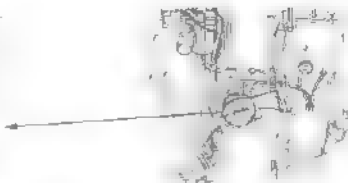
FUEL SYSTEM (Programmed Fuel Injection)

PGM-FI MIL 11 Blinks VEHICLE SPEED SENSOR

Turn the ignition switch OFF.

Disconnect the vehicle speed sensor 3P connector.
Check for loose or poor contact on the vehicle speed sensor connector.

SPEED SENSOR
CC 4/VE 10-4



Caution: Do not touch the vehicle speed sensor 3P connector.
Start the engine.

Ride the motorcycle and keep the engine rev more than 5,000 min. (approx. 20 seconds or more).

Put the side stand down, and check that the MIL blinks.

No blinks

Loose or poor contact on the vehicle speed sensor connector

11 blinks

Turn the ignition switch OFF.

Disconnect the vehicle speed sensor 3P

Turn the ignition switch ON.

Measure the voltage at the wire harness side connector.

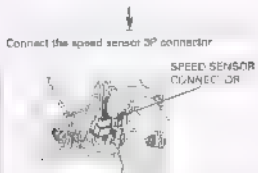
2. of 2. de

Open or short circuit - Black wire of the engine wire harness.
Open or short circuit - Black/Brown wire of the main wire harness.



Connection: Black (Brown) - Green (-)
Standard: 12 V

voltage 12 V



↓

Disconnect the ECM connectors
Connect the test harness to the wiring harness connector

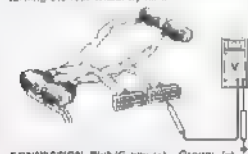


↓

As you turn the ignition key, the engine should crank but not start.
Push the accelerator pedal into gear.
Measure the voltage at the test harness terminals with the ignition switch is ON while slowly turning the test wheel by hand.

Result

• Open or short circuit in Pink/Green wire of the main wire harness



Normal

• Replace the ECM with a new one, and inspect it again

FUEL SYSTEM (Programmed Fuel Injection)

PGM-FI MIL 12 BLINKS (No. 1 INJECTOR)

Turn the ignition switch OFF

Disconnect the No. 1 injector 2P connector.
Check for loose or poor contact on the No. 1 injector 2P connector.



Connect the No. 1 injector 2P or injector.
Place the motorcycle on its side stand.
Turn the ignition switch ON.
Check that the MIL blinks.



MIL blinks

Turn the ignition switch OFF.
Disconnect the No. 1 injector 2P connector and
measure the resistance of the No. 1 injector.



Connection

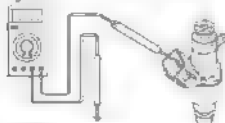
Black/White (+) - Pink/Yellow (-)
Standard: 13.0 - 14.4 (20°C , 68 $^{\circ}\text{F}$)

NOTES

Check for continuity between the No. 1 injector and ground

Continuity

Fix faulty No. 1 injector



Connection:

Black/White (+) Ground (-)

Standard: No continuity

Turn the ignition switch ON

Measure the voltage between the No. 1 injector connector of the wire harness side and ground

Out of range

Check wire and check it in Black/White wire



Connection:

Black/White (+) Ground (-)

Standard: Battery voltage

Voltage exists

Turn the ignition switch OFF

Connect the No. 1 injector connector

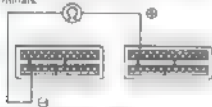


FUEL SYSTEM (Programmed Fuel Injection)

Disconnect the ECM connectors and disconnect the harness to the wire harness connectors.

ECU TEST HARNESS

Measure the resistance of the fuel line sensor terminals.



Connection: A13 (+) - B3 (-)
Standard: 0 - 10 (20°C/68°F)

Normal

Connect the fuel line sensor to the fuel line sensor connector and ground.

Continuity

Open circuit Block/AM for only 10 min. → Voltage drop



Connection: A13 (+) - Ground (-)
Standard: No continuity

No continuity

Replace the ECM with a new one, and inspect it again.

PGM-FI MIL 13 Blinks (No. 2 INJECTOR)

1. Turn the ignition switch OFF.

2. Disconnect the No. 2 injector 2P connector.
Check for noise or poor contact on the No. 2 injector 2P connector.



3. Connect the No. 2 injector 2P connector.
Place the motorcycle on its side stand.
Turn the ignition switch ON.
Check that the MIL blinks.



13 blinks

4. Turn the ignition switch OFF.
Reconnect the No. 2 injector 2P connector and
check the resistance of the No. 2 injector.



Connector

Blank/White (+) Pink/Blue (-)

Standard: $1\frac{1}{2} - 12.3$ ($30^{\circ}\text{C}/86^{\circ}\text{F}$)

Normal



No. 2 blinks → Loose or poor contact on the No. 2 injector connector

Abnormal → Faulty No. 2 injector

FUEL SYSTEM (Programmed Fuel Injection)

Check for continuity between one Pin 2 injector and ground.



Connection:

Black/White = Ground

Standard: No continuity

continuity

Faulty: Pin 2 injector

No. 2 wire

Turn the ignition switch OFF.

Measure the voltage between the No. 2 injector connector of the wire harness side and ground.



Connection:

Black/White = Ground

Standard: battery voltage

2. change

Open the circuit of Black/White wire

Voltage is 12V

Turn the ignition switch OFF.

Connect the No. 2 injector connector.



Disconnect the ECM connectors
Connect the test harness to the wire harness connector.

ECU TEST HARNESS



Measure the resistance of the test harness terminals.



Connection: A2 - A1 - A2 (+)
Standard: 8 - 15 $^{\circ}$ C (30 $^{\circ}$ F)

Out of range

Open circuit in Black/White and/or Pink/Blue wire

Check for continuity between the test harness terminals and ground

Continuity

Short circuit in Pink/Blue wire



Connection: A2 - Ground
Standard: No continuity

No continuity

Replace the ECM with a new one, and repeat again

PGM-FI MIL 14 BLINKS (No.3 INJECTOR)

Turn the ignition switch OFF

Disconnect the No.3 injector 2P connector
Check for loose or poor contact on the No.3
Injector 2P connector.



Connect the No.3 injector 2P connector
Place the motorcycle on its side stand.
Turn the ignition switch ON
Check that the MIL blinks.



MIL blinks

→ Loose or poor contact on the No.3 injector connector

Turn the ignition switch OFF
Reconnect the No.3 injector 2P connector and
measure the resistance of the No.3 injector.



Connection

Black/White → Pink/Green (→)
Standard: 15.0 - 14.4 (20°C/68°F)

No. 3

Abnormal

Verify No. 3 injector

Check for continuity between the No. 3 injector and ground

continuity

results No. 3 injector



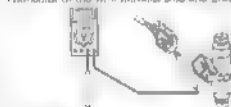
Connection:
Black/White (+) = Ground (-)
Standard: No continuity

no continuity

Turn the ignition switch ON
Measure the voltage between the No. 3 injector terminal of the wire harness side and ground

Out of range

= Open or short or fault in Black/White wire



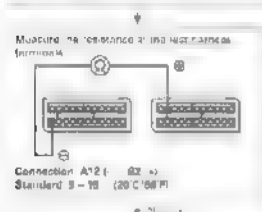
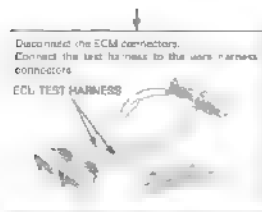
Connection:
Black/White (+) = Ground (-)
Standard: Battery voltage

battery voltage

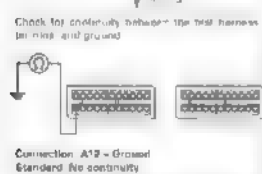
Turn the ignition switch OFF
Connect the No. 3 in-pair connector



FUEL SYSTEM (Programmed Fuel Injection)



Out → **Open circuit in Black wire and/or Pink/Green wire**



Continuity → **Short circuit in Pin 104 and wire**

No continuity → **Repair or replace with a new one and repeat it again**

PGM-FI MIL 15 BLINKS (No. 4 INJECTOR)

Turn the ignition switch OFF.

Disconnect the No. 4 injector 2P connector.
Check for loose or poor contact on the No. 4 injector 2P connector.



Connect the No. 4 injector 2P connector.
Push the stop button on the side of the
TCM to make the switch ON.
Check that the MIL blinks.



↓ 5 blinks

To check the switch, turn OFF.

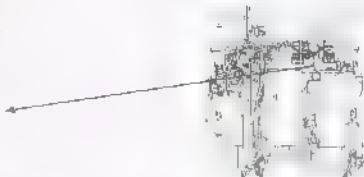
Disconnect the No. 4 injector 2P connector and
verify the resistance of the No. 4 injector.



Connection

Black/White (+) - Pink/Black (-)
Standard: 11.0 - 14.4 (20°C/68°F)

Pin out



No blinks

→ Loose or poor contact on the No. 4 injector connector

If normal

→ Go to No. 4 injector

Check for continuity between the No.4 injector

Am. 0 100



Connection
Black/White (+) - Ground (-)
Standard: No continuity

Continuity

Faulty No.4 injector

No continuity

Turn the ignition switch ON

Measure the voltage between the No.4 injector connector of the wire harness and ground



Connection
Black/White (+) - Ground (-)
Standard: Battery voltage

Out of range

• Open or short circuit in Black/White wire

Wiring harness

Set the ignition switch to OFF

Check the No.4 injector connector



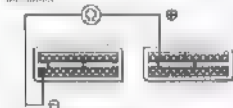
Disconnect the ECM connectors.
Connect the test harness to the wire harness connectors.

ECU TEST HARNESS

Measure the resistance at the test harness terminals.

Open > range

Open > range = Black/White to Open > range/Black wire



Connection A12 - B2 (+)
Standard 9 - 18 (20°C/68°F)

Check for continuity between the test harness terminals and ground.

Continuity

Continuity = Short circuit in Pink/Black wire



Connection A12 - Ground
Standard No continuity

No continuity

No continuity = Replace the ECM with a new one, and inspect it again.

FUEL SYSTEM (Programmed Fuel Injection)

PGM-FI MIL 1B BLENKS (CAM PULSE GENERATOR)

Turn the ignition switch OFF

Disconnect the cam pulse generator 2P connector

Check for loose or poor contact on the cam pulse generator 2P connector



Connect the cam pulse generator 2P connector. Place the motorcycle on its side stand. Turn the starter motor more than 10 seconds and then check that the MIL blinks.

1B blinks

Turn the ignition switch OFF and the engine stop switch OFF

Disconnect the cam pulse generator 2P connector



Check the continuity between the cam pulse generator connector terminal and ground



Connection: White/Yellow Ground
Standard: No continuity

No continuity

No blinks

0 min. or more: Check the cam pulse generator 2P connector

Continuity

Replace cam pulse generator

Start the engine with the starter motor and measure the cam pulse generator peak voltage at the cam pulse generator 2P connector.



Connection: Gray (+) White/Yellow (-)
Standard: 0.7 V minimum (20°C/68°F)

Normal

Connect the cam pulse generator 2P connector.
Disconnect the ECM connectors.
Connect the test harness to ECM connectors.

FUEL TEST HARNESS



Out of range

Faulty cam pulse generator

Check the voltage at the ECM connectors. If the voltage is not 0.7 V, check the wiring.



Connection: B11 (+) Ground (-)
Standard: 0.7 V minimum (20°C/68°F)

Not hit

Replace the ECM with a new one, and inspect it again.

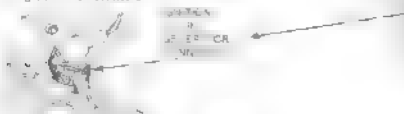
Open circuit in White/Yellow and/or Gray wire

PGM-FI MIL 19 BLINKS (IGNITION PULSE GENERATOR)

- Ignition switch OFF

Disconnect the ignition coil secondary plug wire.

Check for loose or poor contact on the ignition pulse generator SP connector.



Place the motorcycle on its side stand.
Turn the starter motor more than 4 seconds
and then check that the MIL blinks.

- No blinks → Loose or poor contact on the ignition pulse generator SP connector

Turn the ignition switch OFF and the engine

- Ignition switch OFF

Disconnect the ignition coil secondary plug wire.



Check the continuity between the ignition pulse generator collector terminal and ground.

- No continuity → Faulty ignition pulse generator



Connection: White/Yellow - Ground
Standard: No continuity

PGM-FI MIL 19 BLINKS

Crank the engine with the starter motor and measure the ignition pulse generator peak voltage at the ignition pulse generator 2P terminal.

Out of range → Replace ignition pulse generator.



Connection: Yellow (+) Yellow/White (-)
Standard: 0.7 V minimum (20°C/68°F)

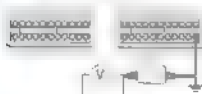
Normal

Connect the ignition pulse generator 2P to ground.
Disconnect the E-M connectors.
Connect the test leads to E-M or ECM pins.



Crank the engine with the starter motor and measure the ignition pulse generator peak voltage at the fuel harness terminals.

Out of range → Check continuity in this yellow wire and continuity in the new wire.



Connection: B1 (+) Ground (-)
Standard: 0.7 V minimum (20°C/68°F)

Normal

Replace the ECM with a new one and inspect it again.

FUEL SYSTEM (Programmed Fuel Injection)

PGM-FI MIL 20 BLINKS (E₂ PROM)

Turn the ignition switch OFF.

Inspect the ECM connectors.
Check for loose or poor contact at the ECM connectors.



Connect the ECM connectors.

Hold the ECM connector with a jumper wire (page 4-6).
Turn the ignition switch ON and check the MIL blinks.

Remove the jumper wire from the ECM connector (page 5-6).

SERVICE CHECK
COMPLETE



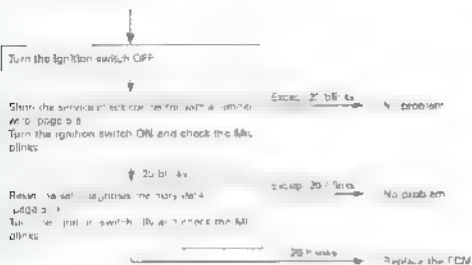
JUMPER WIRE



20 blinks

20 blinks





FUEL LINE INSPECTION

FUEL PRESSURE INSPECTION

NOTICE

- Before disconnecting fuel hoses, release the fuel pressure by loosening the service check ball at the fuel tank.
- Always replace the sealing washers when the service check ball is removed or replaced.

Open and support the front end of the fuel tank.

(page 3-4)

Remove the air cleaner housing side cover (page 2-2).

Unhook the battery cover supports, then open the battery cover.

Disconnect the battery negative cable from the battery terminal.

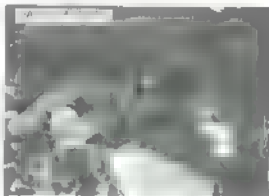
NEGATIVE CABLE

BATTERY

Disconnect the pressure regulator vacuum tube and plug the vacuum tube.

Cover the fuel hose sealing nut with a rag or shop towel.

Slowly loosen the fuel hose sealing nut and catch the remaining fuel using a approved gasoline container.

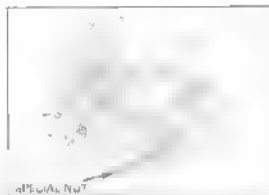


Remove the fuel tube sealing nut, install the special nut (Honda Genuine part) and attach the fuel pressure gauge.

Special nut Part No. 9C201-60A-903

TOOL

Fuel pressure gauge 07406-0040002
or
07406-0040003



Connect the battery negative cable. Start the engine.
Read the fuel pressure at idle speed.

IDLE SPEED: 1,200 ± 100 min⁻¹ (rpm)
STANDARD 343 kPa (3.5 kg/cm², 50 psi)

If the fuel pressure is higher than specified, check the following:

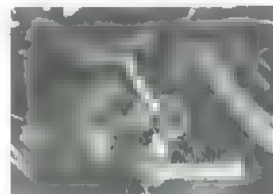
- Pinched or clogged fuel return hose
- Pressure regulator
- Fuel pump (page 5-47)

If the fuel pressure is lower than specified, check the following:

- Fuel leak
- Clogged fuel filter
- Pressure regulator
- Fuel pump (page 5-47)

After inspection, remove the fuel pressure gauge and reinstall end-socket. Re-fuel hose sealing nut using the new sealing washer.

TORQUE 22 N·m (2.2 kgf-m, 16 lbf-ft)



Connect the pressure regulator vacuum tube.

Reinstall the removed parts in the reverse order of removal.



FUEL FLOW INSPECTION

Remove the cap (page 3-2).

Open and support the front end of the fuel tank (page 3-5).

Disconnect the fuel cut relay connector.

Check the wires

fuel
cut relay

Join the Brown and Black/White wire terminals at the wire harness side using a jumper wire.

- When a fuel leak is observed, gasoline will spill out from the hose. Use a approved gasoline container to drain the gasoline.
- Wipe off spilled gasoline.

Disconnect the fuel injection hose at the fuel tank, plug the fuel tank inlet joint.

Turn the ignition switch ON for 10 seconds.
Measure the amount of fuel flow.

Amount of fuel flow

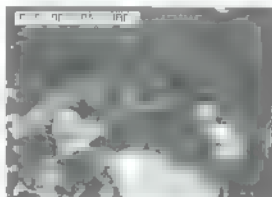
210 cc (8.7 US fl oz, 0.9 imp gal) minimum
10 seconds at 12 V

If the fuel flow is less than specified, inspect the following.

- Pinched or clogged fuel hose and fuel return hose
- Clogged fuel filter
- Pressure regulator
- Fuel pump (page 3-47)

After inspection, connect the fuel injection hose.
Start the engine and check for leaks.

FUEL CUT RELAY



FUEL PUMP

INSPECTION

Turn the ignition switch ON and confirm that the fuel pump operates for a few seconds.
If the fuel pump does not operate, inspect as follows.

Open and support the front end of the fuel tank (page 3-15).

Disconnect the fuel pump 3P connector.

Turn the ignition switch ON and measure the voltage between the terminals.

Connection: Brown (+) - Green (-)

There should be battery voltage for a few seconds.

If there is battery voltage, replace the fuel pump.
If there is no battery voltage, inspect the following.

- Main fuse (20A)
- Ignition switch (page 3-15)
- Fuel relay (page 3-15)
- Fuel pump relay (page 3-15)
- Fuel pump (page 3-15)

REMOVAL

1. At

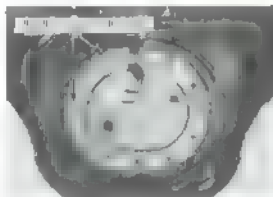
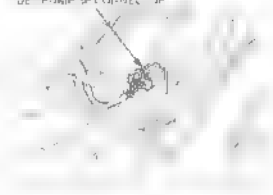
- Before disconnecting the fuel lines, release the fuel pressure by loosening the fuel hose sealing nut at the nozzle body.
- Always replace the sealing washers when the fuel hose sealing nut is removed or loosened.

Remove the fuel tank (page 3-15).

Remove the fuel pump mounting nuts.

Remove the fuel pump assembly and packing.

FUEL PUMP 3P CONNECTOR



FUEL PUMP ASSEMBLY



FUEL SYSTEM (Programmed Fuel Injection)

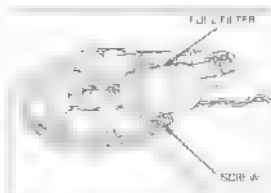
FUEL FILTER REPLACEMENT

Disconnect the fuel tubes from the fuel filter.
Remove the screws and fuel lines.

Note the direction
of the flow filter.

Install the fuel filter in the reverse order of removal.

Do not use tape.



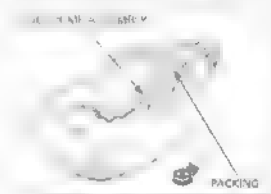
INSTALLATION

Check engine

Place new packing onto the fuel tank.

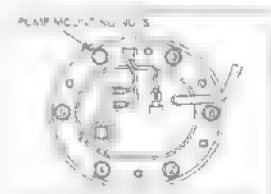
Reconnect.

Install the fuel pump, being careful not to damage the fuel pump wires.



Loosen and tighten the fuel pump mounting nuts in the sequence shown.

TORQUE 12 Nm (12 kgf-cm, 9 lbf-ft)



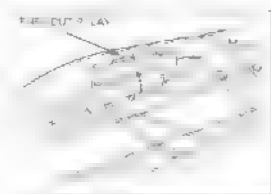
FUEL CUT RELAY

ASPECT ON

Remove the rear cover (page 23).

When the engine
starts when you
select the fuel cut
relay.

Disconnect the fuel cut relay 4P connector, removing the fuel cut relay.



FUEL SYSTEM (Programmed Fuel Injection)

Remove the following:

- the air filter
- the air filter housing
- the air filter service air filter door

Remove the air filter hose.

Disconnect the air filter hose at the pressure regulator.



Remove the cap and maintenance air.



Close the fuel tank.

Remove the fuel tank cap and maintenance air.



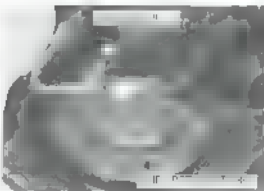
Place the fuel tank in the engine.

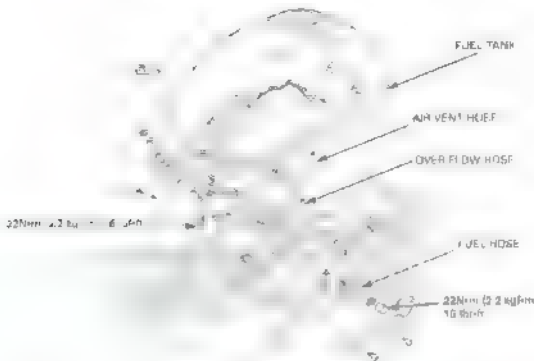
NOTICE

Do not damage the fuel pump.

Disconnect the fuel return tube from the fuel pump.
Remove the fuel hose at the fuel filter and seal the opening.
Then remove the fuel filter from the fuel pump.

Refer to page 5-42 for fuel pump removal.





Connect the fuel hose to the fuel pump with new seal and tighten.

Install and tighten the fuel hose to the fuel pump to the specified torque.

TORQUE 22 Nm (2.2 kgf-m, 16 lbf-ft)

Connect the fuel return hose to the fuel pump.



Install the fuel tank onto the frame. loosely install the fuel tank mounting bolts.

Support the front end of the fuel tank.



Install the following:

- 1. Fuel pump reserve sensor
- 2. Fuel pump reserve sensor JP connector

On all Chassis turn it to be pressurized. Connect the fuel pump reserve sensor JP 15 to the meter.

Install the fuel pump reserve sensor JP 15 to the meter.

Connect the fuel hose to the fuel pump body with the sealing washers. It is possible to use the fuel hose with the sealers. It is possible to use the fuel hose with the sealers. It is possible to use the fuel hose with the sealers.

Note:

- 1. Fuel pump reserve sensor JP 15 to the meter.
- 2. Fuel pump reserve sensor JP 15 to the meter.

TORQUE 22 N-m (2.2 kgf-m) 15 lbf-ft

Push the fuel hose forward and install the fuel hose.

Slide the fuel hose forward and install the fuel hose. Tighten the fuel hose mounting collar to the specified torque.

TORQUE 12 N-m (1.2 kgf-m) 9 lbf-ft

Install the side cover (page 7-2)

FUEL RETURN HOSE

JP 15 to EL 14



Fuel Hose



AIR CLEANER HOUSING

REMOVAL

Remove the throttle cables from the right hand side switch housing (page 533).

Remove the following:

a) inlet pipe (2)

at 1200 cc/min on page 25

Remove the vacuum tubes from the intake manifold.

Disconnect the intake air duct on the fuel side of the 2P carburettor.

Disconnect the pressure and 3P connections.

Disconnect the crankcase breather tube from the air cleaner housing.

Caution: type only. Disconnect the No 6 tube from the five way joint.

Disconnect the fuel injection on each side of the 3P carburettor.

Remove the starter valve and play bolt.



FUEL SYSTEM (Programmed Fuel Injection)

Remove the IAT sensor air connector.

Remove the air cleaner housing mounting bolt.

AIR CONNECTOR



Loosen the lower band screws
cylinder head side.

Disconnect the throttle body from the cylinder head.
Remove the air cleaner housing/throttle body from
the left side of the engine.

SCREW - LOWER



NOTE

Seal the cylinder head intake ports with tape or a
clean cloth to keep dirt and debris from entering the
intake ports after the throttle body has been removed.

DISASSEMBLY

Remove the vacuum tube from the crankcase vent.

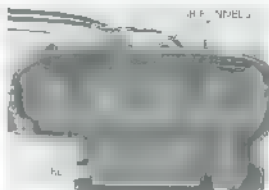


Remove the screws from the air cleaner housing and
separate the housing.



Remove the air cleaner housing from the engine.

Remove the air cleaner housing.



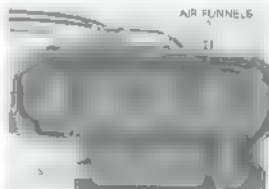
ASSEMBLY

- Install the air cleaner housing on the engine.
- Tighten the air cleaner housing screws.
- Check the air cleaner housing for damage and replace if necessary.



- Check the air cleaner housing for damage and replace if necessary.

Install the air cleaner housing on the engine. Tighten the air cleaner housing screws. Check the air cleaner housing for damage and replace if necessary.



Assemble the air cleaner housing to the engine. Tighten the air cleaner housing screws.



FUEL SYSTEM (Programmed Fuel Injection)

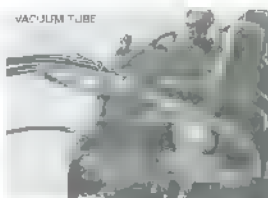
Connect the vacuum tube to the one-way valve.

Connect the crankcase breather tube to the air cleaner housing.

Connect the PAIR control valve air suction tube and make vacuum tubes to the air cleaner housing.

Connect the MAP sensor connector and vacuum tube.

VACUUM TUBE



INSTALLATION

Install the air cleaner housing/body from the left side of the frame.

After the engine head side, install the air cleaner body from the left side of the frame.

4 ± 1 mm (0.2 ± 0.04 in)



Install the IAT sensor 2P connector to the air cleaner housing mounting bolt.

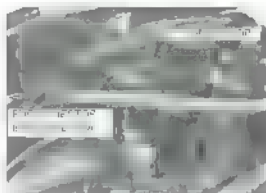
2P CONNECTOR



Install and tighten the hy-dra-ster valve knob stay bolt.



Connect the fuel injector BP connector
Connect the No. 4 fuel injector 2P connector



Connect the drain hose breather tube to the air cleaner housing

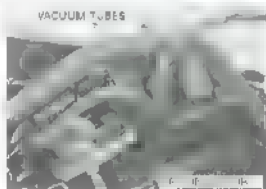


Install the vacuum tubes in the intake air duct control solenoid valve.

Connect the intake air duct control solenoid valve 2P connector
Connect the cam pulse generator 2P connector

Install the 1/2" hose
Install the 1/2" hose
Install the 1/2" hose

Connect the throttle cable to the throttle plate (page 3-9)



THROTTLE BODY

REMOVAL

NOTE

- Before disconnecting the fuel hose, relieve the fuel pressure by loosening the service check valve.
- Always replace the sealing washer when the service check valve is removed or installed.

DISASSEMBLY

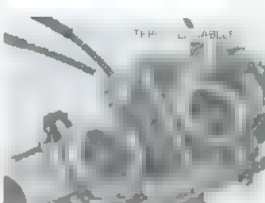
Remove the throttle body sub-assembly from the TP

- Remove the throttle cable from the throttle body.
- Remove the throttle cable from the throttle body.

Remove the throttle cable from the throttle body.

Remove the throttle cable from the throttle body.

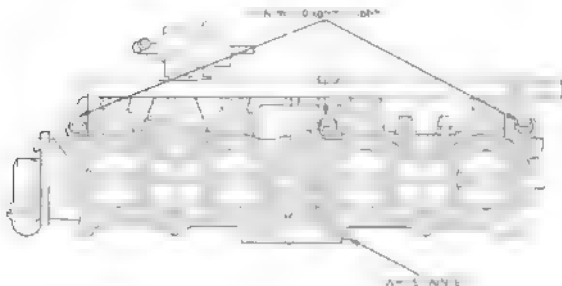
Disconnect the throttle cable ends from the throttle body.



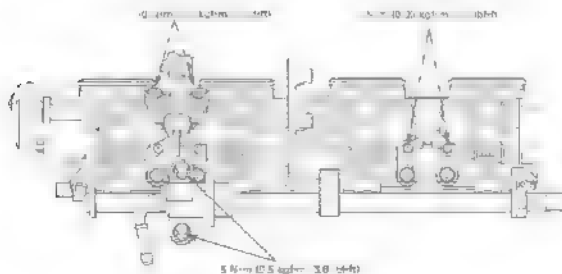
NOTICE

When replacing the fuel valve, make sure to connect the air line valve synchronization properly. If the air line valve is not connected properly, the air line valve will not work. If the air line valve is not connected properly, the air line valve will not work. If the air line valve is not connected properly, the air line valve will not work. If the air line valve is not connected properly, the air line valve will not work.

TOP VIEW



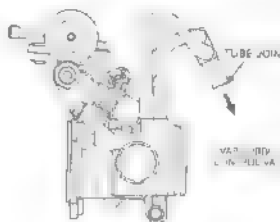
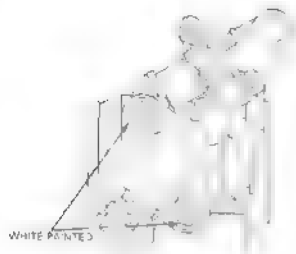
REAR VIEW



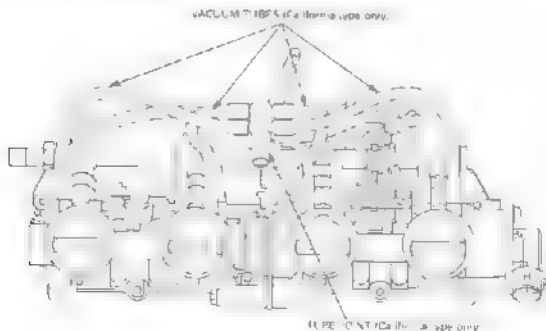
FUEL SYSTEM [Programmed Fuel Injection]

RIGHT SIDE VIEW

CALIFORNIA TYPE ONLY



THROTTLE BODY VACUUM TUBE ROUTING



ASSEMBLY

Connect the throttle cable ends to the throttle body.



Check the insulator bend angle.
Install the Insulators onto the throttle body.



Position the throttle body into the intake manifold so that the insulator bend distance is 7 ± 1 mm (0.3 ± 0.04 in.).

Approach to the required angle surface for wave of throttle body installation.



Connect the vacuum tube to the throttle body.



FUEL SYSTEM (Programmed Fuel Injection)

Route the fuel lines and sub harness properly and connect the fuel injector to the fuel harness or harness.

Install the throttle body to the air plenum case (page 5-55).

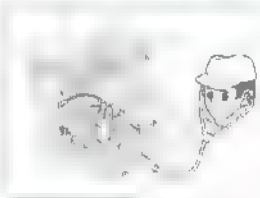


INJECTOR

INSPECTION

Start the engine and let it idle.
Confirm the injector operating sounds with a sound
rip rod or stethoscope.

If any injector does not operate, replace the injector.



REMOVAL

Remove the throttle body (page 5-55).

Remove the bolts and fuel rail assembly.



Remove the injectors from the fuel rail.



Remove the C rings.

INSTALLATION

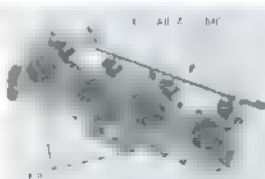
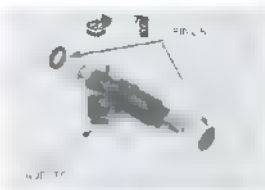
Apply a thin coat of oil to the new O-rings and the seating surfaces of the fuel injector body and the fuel rail.

Install the fuel injectors into the fuel rail being careful not to damage the O-rings.

Install the fuel rail into the engine block and secure it with the fuel rail nut. Tighten the fuel rail nut to the torque specified in the torque table.

TORQUE 12 Nm (9.2 lbf·ft, 8 lbf·ft)

Install the fuel rail body. (page 5-66)



PRESSURE REGULATOR

REMOVAL/INSTALLATION

NOTE:
Do not apply excessive force to the fuel line. Hold the fuel line steady and use the screwdriver or the other tools to move the pressure regulator.

FUEL SYSTEM (Programmed Fuel Injection)

Disconnect the vacuum tube from the pressure regulator.

Install a new O-ring into the pressure regulator body.
Install the pressure regulator onto the fuel pipe.

Connect the vacuum tube to the pressure regulator.



Hand-tighten fuel pipe securely, tighten to breakdown torque mounting bolts to the specified torque.

TORQUE 10 N·m (7.0 lbf·ft) (7 bolts)



STARTER VALVE CABLE/THROTTLE STOP CONTROL KNOB

REMOVAL

Remove the cable stop mounting screws.

Remove the starter valve cable from the cable stop.

Remove the cable stop mounting screws.



INSTALLATION

Connect the starter valve cable end to the line arm.

Install the starter valve cable to the cable stop and tighten the cable stop mounting screws securely.



STARTER VALVE

DISASSEMBLY

Remove the fuel rail and injectors (page 5-62).

Turn each starter valve adjusting screw in, counting the number of turns until it seats tightly. Record the number of turns.

STARTER VALVE

STARTER VALVE ARM

Remove the starter valve cable from the stop control knob (page 5-62).

Remove the starter valve arm screws and starter valve arm.

CABLE

Remove the screws and lock arm.

Remove the starter valve shaft and three coils.

VALVE

SHAFT

FUEL SYSTEM (Programmed Fuel Injection)

Loosen the lock nut and remove the starter valve assembly.

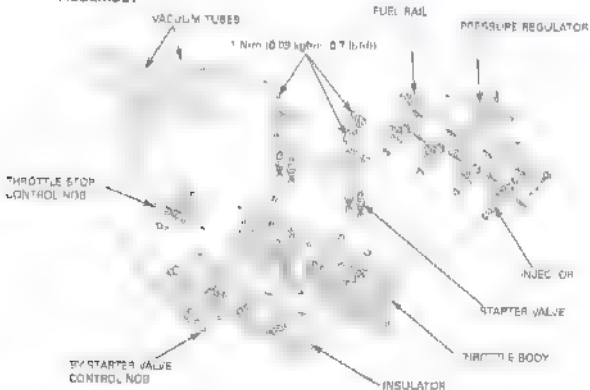


Do not apply grease manually, use spray.

Clean the starter valve bypass using compressed air.



ASSEMBLY



Check the starter valve and spring for damage.

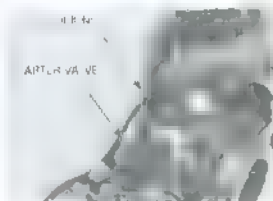
STARTER VALVE



Install the starter valve assembly into the valve hole.

Tighten the starter valve lock nut to the specified torque.

TORQUE: 2 N·m (0.16 kgf-m, 1.3 lb-ft)



Install the starter valve shaft and drive collars.

COLLARS



LINK ARM

Install the link arm to the starter valve shaft and tighten the mounting screws to the specified torque.

TORQUE: 1 N·m (0.08 kgf-m, 0.7 lb-ft)



FUEL SYSTEM (Programmed Fuel Injection)

STARTER VALVE ARM

Install the starter valve arm onto the starter screws. Install and tighten the starter valve arm mounting screws to the specified torque.

TORQUE 1 N·m (0.89 kgf-m, 0.7 lbf-ft)

Note: the starter valve cable/hose and screw head page 5-64



Turn the starter valve screw until it seats tightly. Then back it out as noted during reassembly.

Install the throttle body page 5-66



STARTER VALVE SYNCHRONIZATION

1. Turn the engine over at 500 rpm. The engine should be running smoothly. The tachometer should indicate 50 rpm change.

Join and support the front end of fuel line (page 3-15)

Remove the No. 1 and No. 2 vacuum tubes from the throttle body.

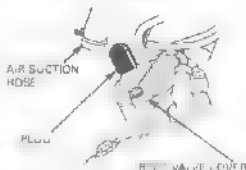


Connect the fuel line to the throttle body.

LO: 12.12.12.12.12.12



Disconnect the PAIR air suction hoses from the feed valve covers and plug the cover.



Start the engine and adjust the idle speed.

IDLE SPEED: $1,200 \pm 100 \text{ min}^{-1} \text{ (rpm)}$

Adjust each intake vacuum pressure with the No. 2 cylinder.



Remove the plugs and connect the PAIR air suction tubes to the feed valve covers.

Adjust the idle speed if the idle speed differs from the $1,200 \pm 100 \text{ rpm}$.

IDLE SPEED: $1,200 \pm 100 \text{ min}^{-1} \text{ (rpm)}$

Remove the vacuum gauge from the vacuum tubes. Connect the pressure regulator vacuum tubes to the 3-way joint. Connect the No. 1 and No. 4 cylinder vacuum tubes to the throttle body.



MAP SENSOR

OUTPUT VOLTAGE INSPECTION

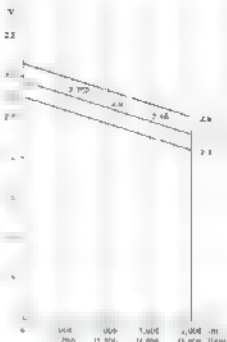
Connect the test harness to the ECM (page 5-2)

Measure the voltage at the test harness terminals (page 5-2)

CONNECTION M7 (+) M1 (-)
STANDARD 2.7-3.1 V

The MAP sensor output voltage should be measured under the standard atmosphere (1 atm = 1,013 hPa). The MAP sensor output voltage is affected by the temperature of the air and the pressure of the air. The output voltage is 2.7-3.1 V at 1 atm and 20°C.

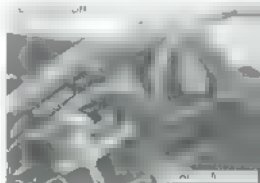
Check the sea level measurement and be sure that the measured voltage falls within the specified range.



MAP SENSOR REMOVAL/INSTALLATION

Remove the fuel tank (page 5-4)

Disconnect the MAP sensor connector from the ECM (page 5-2)



Remove the air cleaner housing (page 5-5)

Remove the screw and MAP sensor from the air cleaner housing.

Check the air filter and replace it if necessary.



IAT SENSOR

REMOVAL/INSTALLATION

Open and support the front end of the fuel tank (page 3-4).

Disconnect the IAT sensor connector.

Remove the screws and the sensor from the air filter bracket cover.



When the fuel tank is refilled, install the

installation in the reverse order of removal.



ECT SENSOR

REMOVAL/INSTALLATION

Disconnect the ECT sensor connector (page 3-5).

Remove the ECT sensor from the engine.

Disconnect the ECT sensor from the engine.



Remove the ECT sensor and clean with

all new seal water for 10-15

Tighten the ECT sensor to 10-15 N·m (7-10

SEALING WASH

TORQUE 23 N·m (2.3 kgf·m, 17 ft·lb)

Connect the ECT sensor to the



Fill the cooling system with recommended coolant (page 3-5).

CAM PULSE GENERATOR

REMOVAL/INSTALLATION

Open and support the front end of vehicle (see page 2-4).

Disconnect the cam pulse generator 2P connector.

Remove the bolt and cam pulse generator from the valve head.

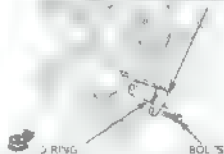
2P CONNECTOR



Install and tighten the retaining bolt securely.

Install and tighten the retaining bolt securely.

VALVE HEAD
CAM PULSE GENERATOR



Route the cam pulse generator wire properly, connect the 2P connector.

Install the removed parts in the reverse order of removal.

2P CONNECTOR



TP SENSOR

INSPECTION

Remove the rear cover (page 4-2).

Disconnect the ECM 22P (Black) and 22P (Light green) terminals.

Check the connectors for loose or corroded terminals.
Connect the ECU test harness between the ECM and main wire harness.

TOOL

ECU test harness 07YAZ-8610160
(two required)

1. INPUT VOLTAGE INSPECTION

Turn the ignition switch ON and measure and record the input voltage at the test harness terminals using a digital multimeter.

CONNECTION

B1 (+) - 222 (-)
Standard: 4.5 - 5.5 V

If the measurement is out of specification, check the following:

- Loose connection of the ECM main connector.
- Open circuit in wire harness.

2. OUTPUT VOLTAGE INSPECTION WITH THROTTLE FULLY OPEN

Turn the ignition switch ON and measure and record the output voltage at the test harness terminals.

CONNECTION

B1 (+) - B8 (-)

MEASURING CONDITION

At throttle fully open

3. OUTPUT VOLTAGE INSPECTION WITH THROTTLE FULLY CLOSED

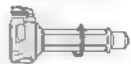
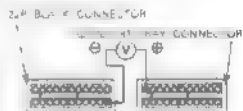
Turn the ignition switch ON and measure and record the output voltage with the throttle fully closed.

CONNECTION

B1 (+) - B8 (-)

MEASURING CONDITION

At throttle fully closed



FUEL SYSTEM (Programmed Fuel Injection)

2. CALCULATE RESULT COMPARISON

Compare the measurement to the result of the following calculation:

With the throttle fully open:

Measured input voltage $\times 0.824 = V_0$

The sensor is normal if the measurement output voltage measured in step 1 is within $\pm 1\%$ of V_0 .

With the throttle fully closed:

Measured input voltage $\times 0.9 = V_1$

The sensor is Normal if the throttle closed output voltage measured in step 3 is within $\pm 1\%$ of V_1 .

Using an analog meter, check that the needle of the voltmeter swings slowly when the throttle is opened gradually.

CONTINUITY INSPECTION

Open and support the free end of fuel tank (page 2-8).

Disconnect the ECM 22P Light Gray connector and the TP sensor 3P connector.

- Check continuity between the wire harness and the ECM 22P connector.
- Check continuity between the wire harness and the TP sensor 3P connector.



BANK ANGLE SENSOR

INSPECTION

Support the motorcycle on a level surface.

Remove the seat cover (page 2-3).

Turn the ignition switch ON and measure the voltage between the following terminals of the bank angle sensor connector with the sensor connected.

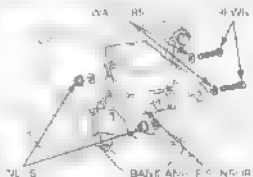


VOLTAGE		REFERENCE
4-10	4-10	50-55
Reference	Reference	1V

Do not disconnect

Turn the ignition switch OFF.

Turn on the battery, wait about 10 seconds and repeat the sensor.



Place the bank angle sensor horizontal as shown and turn the ignition switch ON.

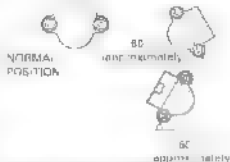
The bank angle sensor is normal if the engine stop relay clicks and power supply is closed.

If the the bank angle sensor approx. 60 degrees to the left or right with the ignition switch ON.

The bank angle sensor is normal if the engine stop relay clicks and power supply is open.

If you repeat this test, first turn the ignition switch OFF then turn the ignition switch ON.

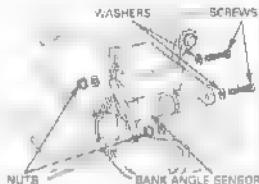
60° BANK ANGLE POSITION



REMOVAL/INSTALLATION

Disconnect the bank angle sensor 3P (Green) connector.

Remove the two screws, nuts and bank angle sensor.



The relation is in the reverse order of removal.

Tighten the mounting screws securely.

BANK ANGLE SENSOR



ENGINE STOP RELAY

INSPECTION

Disconnect the engine stop relay 4P connector.

ENGINE STOP RELAY



FUEL SYSTEM (Programmed Fuel Injection)

Insert the ohmmeter to the engine stop relay of the engine starting system.

CONNECTION: Red/White - Black/White

Insert the ohmmeter at 50V. No flowing is given on the ohmmeter scale.

CONNECTION: Red/Orange - Black

There should be continuity only when the 12 V battery is connected.

If there is no continuity when the 12 V battery is connected, replace the engine stop relay.

ENGINE STOP RELAY

BATTERY



ECM (ENGINE CONTROL MODULE)

REMOVAL/INSTALLATION

Remove the rear cover (page 2-7).

Disconnect the ECM (2P Black) and 22P (light gray) connectors.



POWER/GROUND LINE INSPECTION

Connect the test harness between the meter and rear end and ECM (page 5-7).

TEST:

ECU test harness

07V402-80 (0180)
two required

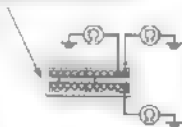
GROUND LINE

Check for continuity between the ECM test harness connector A8 terminal and ground, between the A20 terminal and ground, and between the A12 terminal and ground.

There should be continuity at all times.

If there is no continuity, check for an open circuit in Green/Pink wire and Green wire.

ECU TEST HARNESS



POWER INPUT LINE

Turn the ignition switch OFF with the engine stop switch in the P/N position.

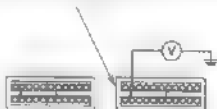
Measure the voltage between the ECM test harness connector B8 terminal () and ground.

There should be battery voltage.

If there is no voltage, check for an open circuit in Black/White wire between the ECM and bank angle sensor relay.

If the wire is OK, check for the bank angle sensor relay (page 5-76).

22P (LIGHT GRAY) CONNECTOR



PAIR SOLENOID VALVE

REMOVAL/INSTALLATION

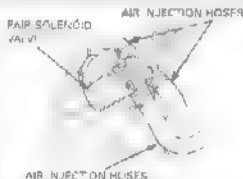
Remove the air cleaner housing (page 5-60)

Disconnect the PAIR solenoid valve 2P Black connector

2P CONNECTOR



Disconnect the PAIR air suction hose and air injection hoses, remove the coil and PAIR solenoid valve

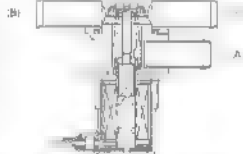


Installation is in the reverse order of removal

INSPECTION

Remove the PAIR solenoid valve

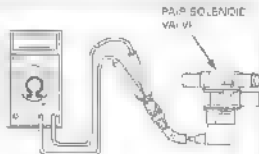
Check that air flows (A to B) only when the 2 V battery is connected to the PAIR solenoid valve terminals



Check the resistance between the terminals of the PAIR solenoid valve.

STANDARD 20 - 24 (20 C, 68 F)

If the resistance is out of specification, replace the PAIR solenoid valve



EVAPORATIVE EMISSION CONTROL SYSTEM (California type only)

Note

- Refer to the Vacuum Hose Routing Diagram and Cable & Harness Routing (page 7-33) for the tube connections and routing.

EVAPORATIVE EMISSION EVAP CANISTER REMOVAL/INSTALLATION

Disconnect the No. 4 and No. 5 tubes from the EVAP purge control solenoid valve.

Remove the bolts, nuts and the EVAP canister from the engine.

Install the EVAP canister in the reverse order of removal.

No. 17 (B) Fuel Injection Injector

No. 4 (B) Fuel Injection Injector

No. 5 (B) Fuel Injection Injector

No. 6 (B) Fuel Injection Injector

No. 7 (B) Fuel Injection Injector

EVAP PURGE CONTROL SOLENOID VALVE

REMOVAL/INSTALLATION

Disconnect the No. 4 and No. 5 tubes from the EVAP purge control solenoid valve.

Remove the bolts, nuts and solenoid valve from the engine.

Disconnect the 2P connector from the solenoid valve.

Install the solenoid valve in the reverse order of removal.

INSPECTION

Remove the solenoid valve.

Check air flow from the fitting (A) (input port) to tube fitting (B) (output port).
Air should not flow out.

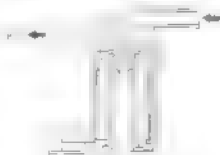
Connect the 12 V battery to the solenoid valve terminals.

CONNECTION

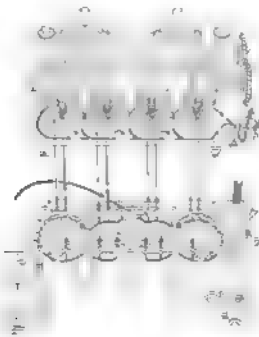
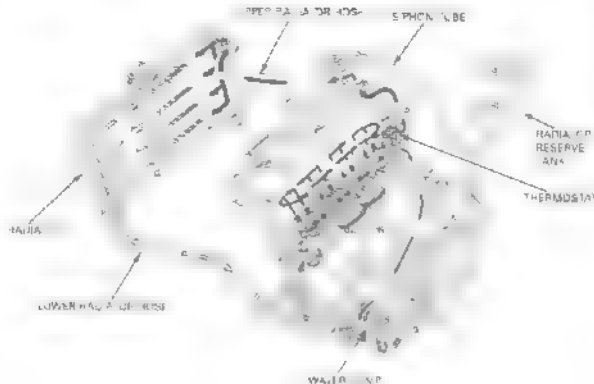
Battery - Black, White terminals

Battery - Yellow, Black terminals

Air should flow from the fitting (A) to fitting (B).



SYSTEM FLOW PATTERN



6. COOLING SYSTEM

SYSTEM FLOW PATTERN	6-0	THERMOSTAT	6-8
SERVICE INFORMATION	6-1	RADIATOR	6-7
TROUBLESHOOTING	6-2	WATER PUMP	6-12
SYSTEM TESTING	6-3	RADIATOR RESERVE TANK	6-15
COOLANT REPLACEMENT	6-4		

SERVICE INFORMATION

GENERAL

▲ WARNING

When working on the cooling system, always use proper safety procedures. Always wear eye protection.

Always use proper lifting techniques when lifting heavy components.

When working on the cooling system, always use proper safety procedures.

When working on the cooling system, always use proper safety procedures.

When working on the cooling system, always use proper safety procedures.

NOTICE

When working on the cooling system, always use proper safety procedures. Always wear eye protection.

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COOLING SYSTEM

SPECIFICATIONS

ITEM		SPECIFICATIONS
Water pump speed	Rated at 1400 rpm	3.3 to 3.5 L/min (2 imp/gal)
Rated cooling water pressure	60 to 80 psi	4.5 to 8.5 psi (0.4 to 0.6 MPa)
Water flow	Rated at 1.5 gpm	1.5 to 1.8 gpm (1.8 to 2.0 gal/min)
Water temperature	100 to 120 °F	60 to 80 °C (175 to 180 °F)
Standard coolant concentration	50% coolant, 50% water	50% coolant, 50% water

Prohibited: Do not use antifreeze containing ethylene glycol inhibitors containing boron. Protection inhibitors specifically recommended for use in aluminum engines.

TORQUE VALUES

Water pump to engine block Torque at 1000 ft-lb (1333 Nm)	2.5 to 3.5 ft-lb (3.3 to 4.7 Nm)	1.5 to 2.0 ft-lb (2.0 to 2.7 Nm)
ECThermo sensor Torque at 1000 ft-lb (1333 Nm)	2.5 to 3.5 ft-lb (3.3 to 4.7 Nm)	1.5 to 2.0 ft-lb (2.0 to 2.7 Nm)

TROUBLESHOOTING

Engine temperature too high

- Faulty water pump or fan motor
- Air in system
- Blocked passages in radiator, hoses or water jacket
- Faulty cooling fan motor
- Faulty water pump

Coolant leak

- Faulty water pump mechanical seal
- Corroded O-rings
- Faulty radiator cap
- Faulty water pump head gasket
- Faulty water pump head gasket
- Faulty water pump head gasket

Engine temperature too low

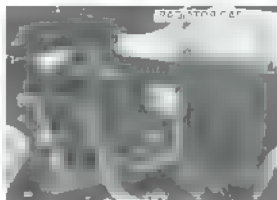
- Faulty water pump or fan motor
- Faulty cooling fan motor

SYSTEM TESTING

COOLANT (HYDROMETER TEST)

Open and support the front end of fuel tank (page 3-4).

Remove the regulator cap.



Test the coolant gravity using a hydrometer (see below for "Coolant gravity chart").

For maximum corrosion protection, a 50-50% solution of ethylene glycol and distilled water is recommended (page 5-4).

For more information, see the "Coolant" section of the "Maintenance" chapter.



COOLANT GRAVITY CHART

Coolant temperature, C/F

	0	5	10	15	20	25	30	35	40	45	50
Weight per gallon	1.009	1.008	1.007	1.006	1.005	1.004	1.003	1.002	1.001	1.000	0.999
10	1.018	1.017	1.016	1.015	1.014	1.013	1.012	1.011	1.010	1.009	1.008
20	1.026	1.025	1.024	1.023	1.022	1.021	1.020	1.019	1.018	1.017	1.016
30	1.041	1.040	1.039	1.038	1.037	1.036	1.035	1.034	1.033	1.032	1.031
40	1.053	1.052	1.051	1.050	1.049	1.048	1.047	1.046	1.045	1.044	1.043
50	1.063	1.062	1.061	1.060	1.059	1.058	1.057	1.056	1.055	1.054	1.053
60	1.072	1.071	1.070	1.069	1.068	1.067	1.066	1.065	1.064	1.063	1.062
70	1.080	1.079	1.078	1.077	1.076	1.075	1.074	1.073	1.072	1.071	1.070
80	1.096	1.095	1.094	1.093	1.092	1.091	1.090	1.089	1.088	1.087	1.086
90	1.119	1.118	1.117	1.116	1.115	1.114	1.113	1.112	1.111	1.110	1.109
100	1.140	1.139	1.138	1.137	1.136	1.135	1.134	1.133	1.132	1.131	1.130

RADIATOR CAP/SYSTEM PRESSURE

Remove the radiator cap when the engine is cool.

Pressure test the radiator cap.

Replace the radiator cap if it does not hold pressure or if relief pressure is too high or too low.

Do not add coolant when the engine is hot.

RADIATOR CAP RELIEF PRESSURE

100 - 127 kPa 1.1 - 1.4 kgf/cm² 15 - 20 psi

Pressurize the radiator, engine and hoses, and check for leaks.

NOTICE

Excessive pressure can damage the cooling system components. Do not exceed 1.2 kgf/cm² (15 psi) 20 psi.

Repair or replace components if the system will not hold specified pressure for at least 5 seconds.

COOLANT REPLACEMENT

PREPARATION

- The effectiveness of coolant decreases with the accumulation of rust or if there is a change in the ratio proportion during usage. Therefore, do not mix old coolant with new coolant.
- Mix only distilled low mineral water with the anti-freeze.

RECOMMENDED ANTIFREEZE

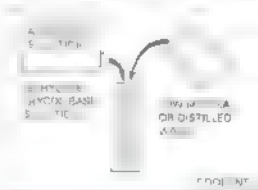
Pur Honda Coolant or an equivalent high quality ethylene glycol antifreeze containing corrosion protection inhibitors specifically recommended for use in aluminum engines.

RECOMMENDED MIXTURE

50-50% distilled water and antifreeze

REPLACEMENT/AIR BLEEDING

Remove the radiator cap.



Remove the lower cover (page 2-4)

Remove the drain bolt on the water pump cover and drain the system coolant.

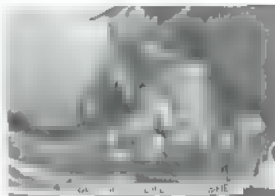
Reinstall the drain bolt with the new sealing washer. Tighten the water pump drain bolt to the specified torque.

TORQUE 12 Nm (11.2 lbf-ft, 9 lbf-in)

Disconnect the siphon tube from the radiator.

Drain the reserve tank coolant.
Empty the radiator and rinse the inside of the reserve tank with water.

Reinstall the radiator siphon tube.



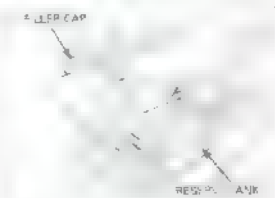
Fill the system with coolant to the upper level line.
Add the coolant to the upper level line.



Remove the radiator reserve tank cap and fill the reserve tank to the upper level line.

Bleed air from the system as follows:

- Shift the transmission into neutral. Start the engine and let it idle for 2 – 3 minutes.
- Snap the throttle 3 – 4 times to bleed air from the system.
- Stop the engine and add coolant up to the upper level if necessary. Reinstall the radiator cap.
- Check the level of coolant in the reserve tank and fill to the upper level if it is low.



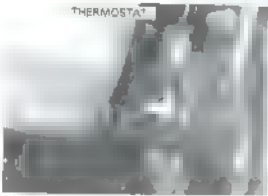
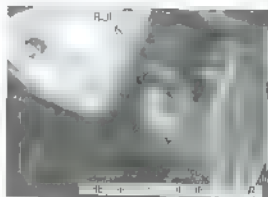
THERMOSTAT

THERMOSTAT REMOVAL

Open and support the front end of fuel tank
(page 3-4)
Drain the coolant (page 8-5)

Remove the bolts and then clean hoses, if any
Remove the O-ring from the thermostat housing cover

Remove the thermostat from the housing



INSPECTION

Wear clean, oil gloves and safety glasses and protection.
Keep the flammable material away from the electric heating element.

Visually inspect the thermostat for damage.

Heat the water with an electric heating element to operating temperature (175-185 °F).
Support the thermostat in heated water to check its operation.

Replace the thermostat if the valve stays open at room temperature, or if it responds at temperature other than those specified.

THERMOSTAT BEGIN TO OPEN:

80 - 84 °C (176 - 183 °F)

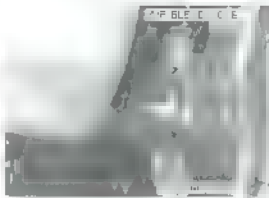
VALVE LIFT

8 mm (0.3 in) minimum at 95 °C (203 °F)

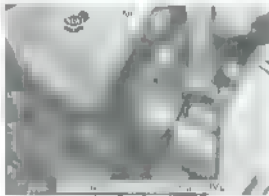


THERMOSTAT INSTALLATION

Install the thermostat housing onto the cylinder head.



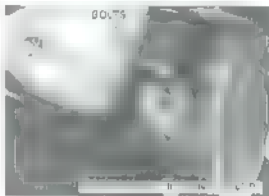
Install the new O-ring onto the thermostat housing cover.



Install the thermostat housing cover onto the cylinder head and tighten the retaining cover bolts.

TORQUE 12 Nm (9 ft-lbs, 8.9 ft-lb)

Fill the coolant and bleed air from the system (page 6-6)



RADIATOR

REMOVAL

Open and support the front end of the vehicle (page 3-4).

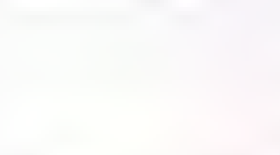
Drain the coolant (page 6-5).

Disconnect the lower radiator hose.



COOLING SYSTEM

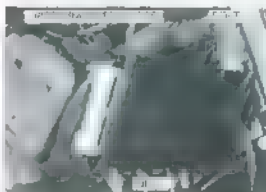
Disconnect the fan from the power source.



Remove the fan from the cooling system.

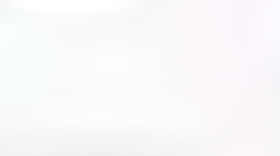
Remove the fan from the cooling system.

Remove the fan from the cooling system.

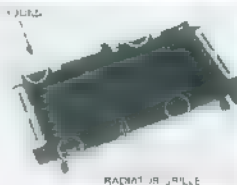


O S ASSEMBLY

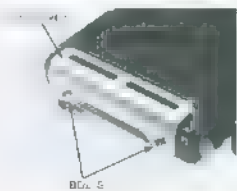
Install the fan into the cooling system.



Install the fan into the cooling system.

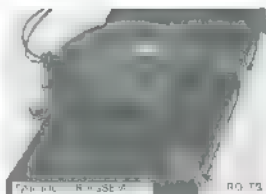


RADIATOR FAN

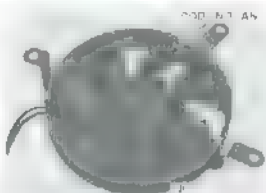


BELT

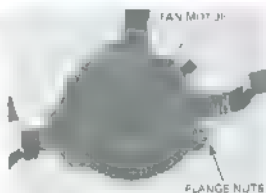
Remove the bolts and fan motor assembly.



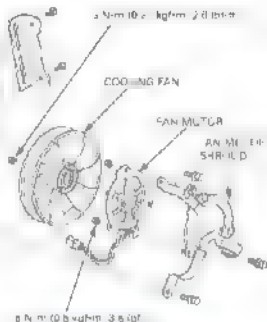
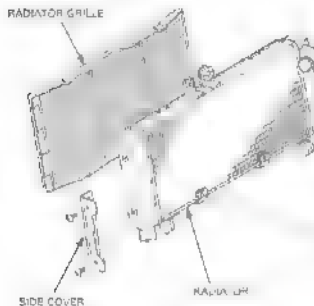
Flip the unit and opening in



Remove the fan motor from the clamp.
Remove the flange nuts at the fan motor mounting base.



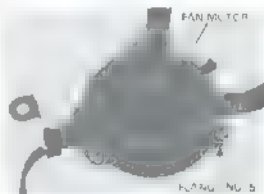
ASSEMBLY



Install the fan assembly onto the fan motor by aligning the slots with the specified torque.

TORQUE 5 N·m (0.5 kgf·m) 3 (107)

Install the fan motor wire to the clamp.

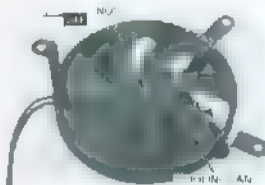


Install the cooling fan onto the fan motor shaft by aligning the fan motor.



Apply a locking screw to the cooling fan in it through the fan and tighten the fan in screw fan on pin.

TORQUE 3 N·m (0.27 kgf·m, 2.0 lbf·ft)

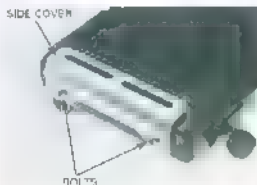


Install the cooling fan and assembly onto the radiator.

Install and tighten the bolts.



Install the cover onto the side of the radiator.



Install the hose of the radiator grille to the radiator.



RADIATOR GRILLE

INSTALLATION

1. Install the radiator assembly as shown in the diagram.

2. Install the upper mounting bolt, then tighten the bolt.

3. Install the radiator lower mounting bolt/nut, tighten the nut securely.

4. Connect the upper radiator hose and tighten hose band clamp securely.



5. Connect the lower radiator hose and tighten hose band clamp securely.

6. Fill the system with recommended coolant (page 6-5).



7. Connect the fan motor 2P connector.

8. Fill the system with recommended coolant (page 6-5).



WATER PUMP

MECHANICAL SEAL INSPECTION

1. Check the mechanical seal for leakage.

2. If there is leakage, the mechanical seal is defective.

3. Replace the hose or clamp as an assembly.

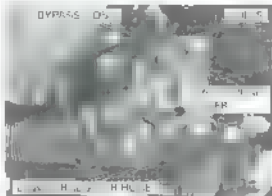


REMOVAL

Drain the coolant (page 6-4).

Disconnect the lower radiator hose and bypass hose from the water pump cover.

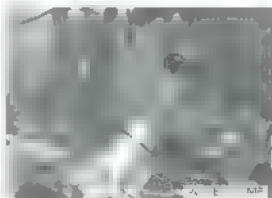
Remove the bolts and water pump cover.



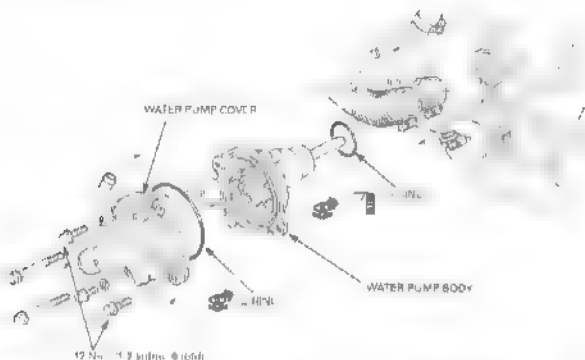
Remove the O-ring from the water pump body.
Disconnect the water pump-to-water pump hose and oil cooler water hose from the water pump body.



Remove the water pump body from the crankcase.

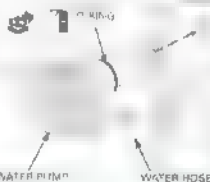


INSTALLATION

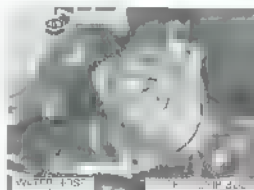


Apply engine oil to a new O-ring and install it onto the slanted portion of the water pump.

Install the water pump on the engine and apply the O-ring to the water pump. The O-ring is shown being applied to the water pump.



Install a new O-ring into the groove in the water pump body.
Connect the water hose.



Connect the water pump-to-water joint. Use install the water pump cover two 5/16 bolts and two flange bolts.

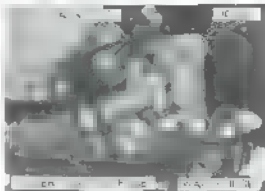
Tighten the flange bolts the same torque.

TORQUE: 12 ft-lb (1.2 kg-m, 1.6 m-ft)

Tighten the two 5/16 bolts.

Connect the lower radiator hose and bypass hose, then tighten the clamp screws.

• If the system with recommended coolant (page 6)
Install the lower cover (page 2-5).



RADIATOR RESERVE TANK

REMOVAL

Remove the rear shock absorber (page 14-10).

Disconnect the sight tube and drain coolant from the radiator tank.

Remove the radiator reserve tank
O-ring the cooler.

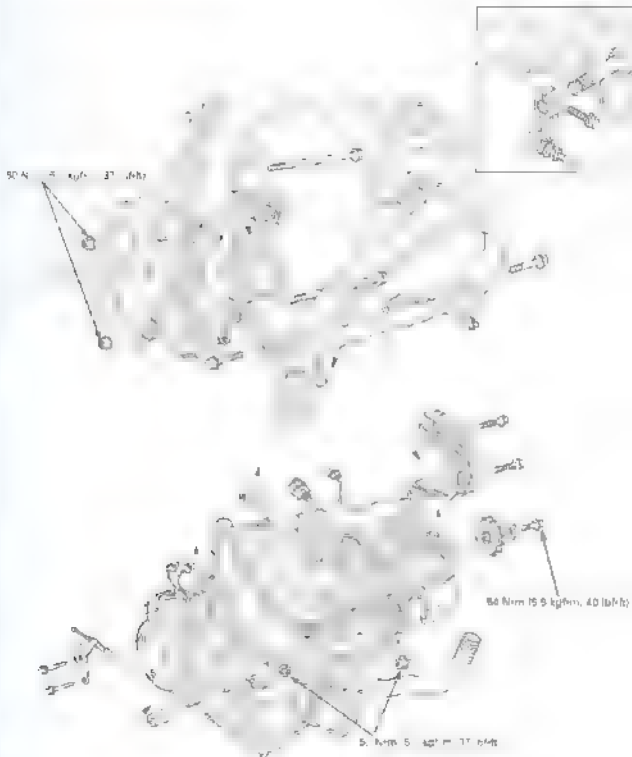


INSTALLATION

Install the tank in the reserve tank (page 14-10).

Install the charge collar and washer as shown.

Install the radiator, as described (page 14-3).



7. ENGINE REMOVAL/INSTALLATION

SERVICE INFORMATION	7-1	ENGINE INSTALLATION	7-8
DRIVE SPROCKET REMOVAL	7-3	DRIVE SPROCKET INSTALLATION	7-8
ENGINE REMOVAL	7-4		

SERVICE INFORMATION

GENERAL

- A chain or equivalent device must be used to support the motorcycle when removing and installing the engine.
- A two-person lift technique is required to support and maneuver the engine.
- The following steps apply to engine removal or service:
 - 1. Remove the drive sprocket.
 - 2. Disconnect the drive shaft.
 - 3. Remove the engine mounting bolts.
- When installing the engine be sure to tighten the engine mounting fasteners to the specified torque in the specified sequence. If you mistake the tighten torque or sequence, loosen all mounting fasteners, then tighten them again to the specified torque and sequence.

ENGINE REMOVAL/INSTALLATION

SERVICE DATA

	ITEM	SPECIFICATIONS
Engine dry weight		26 kg (57 lb)
Engine oil capacity	5.4 (with oil)	4.6 (1.0 US gal) imp qt
Coolant capacity	16.0 (with radiator)	9.1 (2.4 US gal) imp qt

TORQUE VALUES

Front engine hanger bolts/nuts	50 N•m (3.7 kgf-m, 37 lbf-ft)
Rear upper engine hanger bolt/nut	50 N•m (3.7 kgf-m, 37 lbf-ft)
Rear lower engine hanger bolt/nut	40 N•m (3.0 kgf-m, 29 lbf-ft)
Drive sprocket special bolt	54 N•m (4.0 kgf-m, 40 lbf-ft)
Gear shift linkage bolt	20 N•m (1.5 kgf-m, 14 lbf-ft)

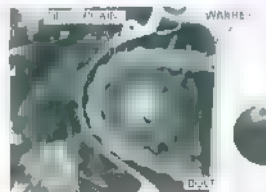
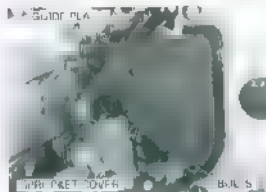
DRIVE SPROCKET REMOVAL

Loosen the drive chain (page 3-15).

Remove the drive sprocket cover bolts and sprocket cover.

Remove the drive chain guide plate.

Use a pry bar to pry the sprocket out. Do not pry sprocket with pry bar directly. The sprocket shell



ENGINE REMOVAL

- Drain the engine oil (page 5-3)
- Drain the coolant (page 5-4)

- Remove the following:
- Clutch cable (page 5-5)
 - Air filter (page 5-5)
 - Ignition coil (page 5-7)
 - Exhaust pipe (page 2-5)
 - Supercharger (page 5-4)

Disconnect the upper water hose

- Disconnect the PWR air supply hose from the

supercharger (page 5-4)

Disconnect the air intake duct (page 5-4)

- Disconnect the following:
- Spark plug (page 2-5)

• Regulator/switch 2 P/W connection

• Ignition coil (page 5-7)

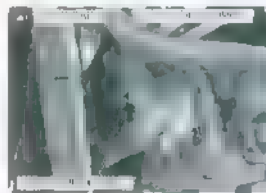
• Supercharger (page 5-4)

• Air intake switch (page 5-4)

• Water pump (page 5-4)

Wiring harness

• Air filter (page 5-5)



Remove the gearshift arm pinch bolt. Then remove the gearshift arm from the gearshift assembly.



Support the engine using a jack or other adjustable support to ease engine hanger bolts removal.



NOTE

Do not support the engine at the oil filter.

Remove the belts and water by peak cover.

Remove the right side of the front engine hanger bolt nut and distance collar.

Remove the left side of the front engine hanger bolt nut and distance collar.



Remove the rear side and lower engine hanger bolts.

Remove the engine.



Note the direction and position of the hanger bolts, nuts and distance collars.

ENGINE INSTALLATION

- The jack height must be continuously adjusted to relieve stress from the mounting fasteners.
Route the wire and cables properly (page 1-23)

NOTE

Be sure to tighten all engine mounting fasteners to the specified torque.

Carefully install the engine into the frame.
Loosely install the rear upper and rear lower engine hanger bolts (see illustration).

Adjust the rear and left side of the front engine hanger bolt nut and reference torque.



Tighten all the engine hanger bolts to the specified torque.

TORQUE

- R/L front engine hanger bolts/nuts
50 N·m (3.7 kgfm, 37 ft·lbf)
- Rear lower engine hanger bolts/nuts
50 N·m (3.7 kgfm, 37 ft·lbf)
- Rear upper engine hanger bolts/nuts
50 N·m (3.7 kgfm, 37 ft·lbf)

Tighten the right side of the front engine hanger bolt to the specified torque.

REAR LOWER ENGINE HANGER
BOLT/NUT



REAR LOWER ENGINE HANGER
BOLT/NUT

FRONT ENGINE HANGER BOLT/NUT

Install the new O-ring to the water by-pass cover.



Install the water by-pass cover to the by-pass and tighten the cover bolts evenly.



Insert the generator blade to the socket by aligning the tip of the shaft with the punch mark of the front pin.

Tighten the bolt to the specified torque.

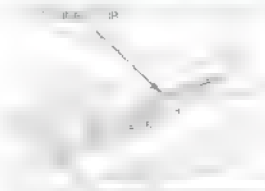
TORQUE 26 Nm (20 kgf·m, 14 ft·lb)



Install the following:

wire band

cam pulse generator 2P connector



ENGINE REMOVAL/INSTALLATION

Start the engine and allow it to warm up. When the engine is warm, disconnect the battery and disconnect the fuel lines from the fuel filter. Disconnect the fuel lines from the fuel filter and disconnect the fuel lines from the fuel filter.



Restart the ignition and allow the engine to warm up. Connect the fuel lines to the fuel filter and disconnect the fuel lines from the fuel filter.

Fill the recommended engine oil up to the proper level (page 3-72). Fill the cooling system with recommended coolant and bleed the air (page 3-8).



DRIVE SPROCKET INSTALLATION

Install the drive sprocket on the engine. Install the drive sprocket on the engine. Install the drive sprocket on the engine. Install the drive sprocket on the engine.



Install the drive sprocket on the engine. Install the drive sprocket on the engine. Install the drive sprocket on the engine. Install the drive sprocket on the engine.

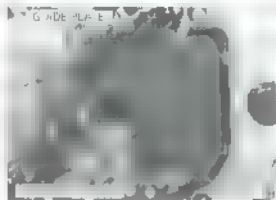
TORQUE: 54 N·m (39.5 lbf·ft, 46 lbf·ft)

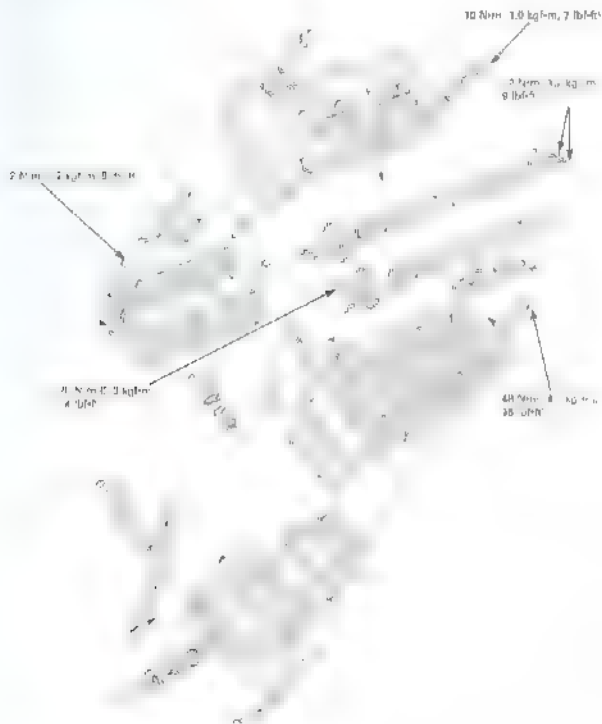


install the drive shaft guide plate.



install the drive shaft cover and tighten the bolts securely.





8. CYLINDER HEAD/VALVES

SERVICE INFORMATION	8-1	VALVE GUIDE REPLACEMENT	8-16
TROUBLESHOOTING	8-3	VALVE SEAT INSPECTION/ REFACING	8-17
CYLINDER COMPRESSION TEST	8-4	CYLINDER HEAD ASSEMBLY	8-20
CYLINDER HEAD COVER REMOVAL	8-4	CYLINDER HEAD INSTALLATION	8-21
CYLINDER HEAD COVER DISASSEMBLY/ASSEMBLY	8-5	CAMSHAFT INSTALLATION	8-23
CAMSHAFT REMOVAL	8-8	CYLINDER HEAD COVER INSTALLATION	8-28
CYLINDER HEAD REMOVAL	8-11	CAM CHAIN TENSIONER LATER	8-29
CYLINDER HEAD DISASSEMBLY	8-12		
CYLINDER HEAD INSPECTION	8-13		

SERVICE INFORMATION

GENERAL

Inspection only is advised of the cylinder head, valves and camshaft.

The pistons were checked for damage and replaced as needed. The cylinder head service for an engine.

- When disassembling, mark and record disassembled parts with date, time and location of disassembly.
- Clean all disassembled parts with cleaning solvent and dry them by blowing them off with compressed air before inspection.
- Check for scoring and wear on all passages in the cylinder head and on the passages before disassembling the cylinder head.
- Be aware of the safety of the engine when removing the cylinder head cover and cylinder head.

TOOLS

Compression or air pressure tester
valve spring compressor
valve spring decompressor and adjustment
tappet hole protector
valve guide driver
valve guide reamer, 4.500 mm
valve seat cutters

Seat cutter, 27.6 mm (45° IN/EX)
Flat cutter, 27 mm (32° E/H)
Flat cutter, 30 mm (32° N)
Interior cutter, 24 mm (60° N/EX)
Cutter holder, 4 mm ID

077ML-MV50100
07757-0010000
07859-KM00000
07HMG-MH70000
07743-0020000
07HMH-MH00000

valve(s) not commercially available

these are commercially available

07760-0010200
07760-0013000
07780-0012200
07780-0010600
07781-0010000

TROUBLESHOOTING

Excessive oil consumption, black smoke, excessive oil on the cylinder walls, hydraulic problems can be diagnosed by using procedure listed in the following table. Refer to the "Oil and Lubricants" section of the "Service" section of this manual for oil change intervals. If the oil is black, it may be a sign of excessive oil consumption. If the oil is white, it may be a sign of excessive coolant leakage. If the oil is milky, check for a cooled piston ring. See also 12.

Compression too low, hard starting or poor performance at low speeds
 1. Check the following:

- Incorrect valve adjustment
- Worn or broken valves

- Broken valve spring
- Worn or broken valve seat

Cylinder head:

• Check the following:

• Warped or cracked cylinder head

Worn cylinder piston or piston rings (section 12)

• Broken valve or broken valve spring

• Worn or broken valve seat

- Loose or worn cam chain
- Worn or damaged cam chain
- Worn or damaged cam chain (section 12)
- Worn or damaged piston rings

Worn piston rings or piston rings (section 12)

Rough idle

- Low cylinder compression

Compression too high, overheating or knocking

- Excessive carbon build-up on piston rings or on cylinder walls

Excessive smoke

Cylinder head:

• Worn valve stem or valve guide

• Damaged piston head

Worn cylinder piston or piston rings (section 12)

Excessive noise

Cylinder head:

• Incorrect valve adjustment

CYLINDER COMPRESSION TEST

Warm up the engine to its normal operating temperature.
 Turn the engine off and allow all fresh ignition
 spark plug caps and caps to warm up (page 3-6).
 Open and support the front end of the car (page 3-8).

Disconnect the fuel pump/fuel valve sensor 2 P
 our nozzle.

Fit all other pressure gauges into the appropriate hole.

NOTE

Compression gauge attachment: 07RMJ-MY60100
 (Equivalent commercially available)

Open the throttle all the way and crank the
 engine with the starter motor until the gauge reading
 begins to drop.
 The gauge reading is the compression pressure.

Compression pressure:

1.2/5 kPa 12.8 kgf/cm², 180 psi at 300 rpm (rpm)

Low compression can be caused by

- Blower cylinder head gasket
 (check the oil seal)
 and the water pump
 (check the oil seal)
- Carbon deposits in combustion chamber of the
 cylinder



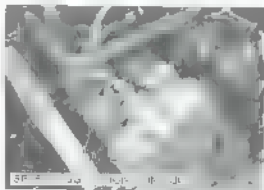
CYLINDER HEAD COVER REMOVAL

Remove the following

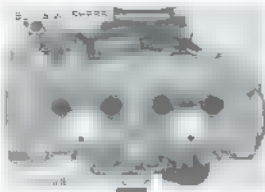
- Ignition coil (page 5-62)
- Spark plug cap (page 3-6)

Remove the crankcase breather tube

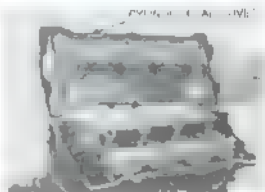
Disconnect the PAIR air suction hoses from the PAIR
 relief valve covers



Remove the cylinder head cover bolts and rubber washers.



Remove the cylinder head cover.
Remove the cylinder head cover gasket.



CYLINDER HEAD COVER DISASSEMBLY/ASSEMBLY

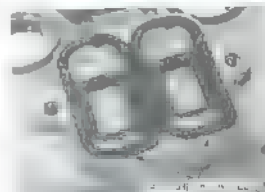
Remove the bolts and PAIR check valve cover.



Check the PAIR check valve for wear or damage.
Replace if necessary.

Installation is in the reverse order of removal.

TORQUE 12 Nm (1.2 kgf-m, 9 lbf-ft)



CYLINDER HEAD/VALVES

Remove bolt and washer cap from bolt.

BOLT

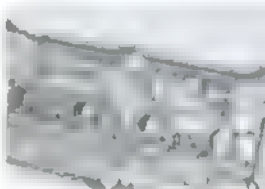


Insert the new gasket to the cover.

Install the breather plate.

Apply the locking agent to the bolt threads and tighten it to the specified torque.

(TORQUE: 12 N·m (1.2 kg-m (8.8 ft-lb))



CAMSHAFT REMOVAL

Remove the cylinder head cover (page 8-4).

Avoid damaging the cam pulse generator while removing the camshaft. Remove the bolt and cam pulse generator from the cylinder head.



Remove the timing hole cap and O-ring.



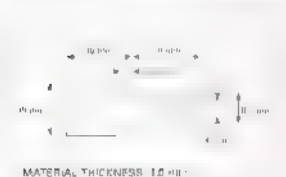
Turn the crankshaft clockwise. Align the "T" mark on the ignition pulse generator rotor with the index mark on the right crankcase cover.
Make sure the flywheel is at TDC (Top Dead Center) in the compression stroke.



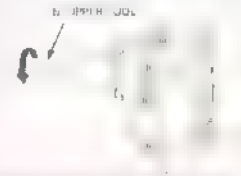
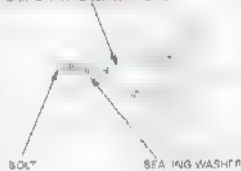
Remove the cam chain tensioner after equipping with a sealing washer.

Turn the crankshaft (flywheel) in clockwise and make the timing chain following the:

Timing chain adjustment procedure:

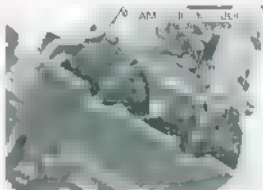


CAM CHAIN TENSIONER AFTER



If you plan to replace the camshaft and/or cam sprocket, loosen the cam sprocket bolts as follows:

Remove the cam sprocket bolts from intake and exhaust cam shafts.



Turn the crankshaft one full turn (360°) remove the other cam sprocket bolts from the camshaft.



Remove the bar.



Remove the bar, and the passage and valve.



Loosen and remove the camshaft holder bolts then remove the cam sprocket, cam chain guide & camshaft holder and cushion.

NOTICE

From outside to inside, loosen the valve adjustment after in several steps or the camshaft holder might break.

Do not forcibly remove the down pins from the camshaft holder.



Remove the valve lifters and shims

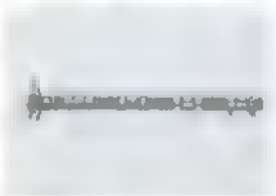
- Be careful not to damage the valve lifter bore.
- Shim may stick to the inside of the valve lifter. Do not allow the shim to fall into the crankcase.
- Mark all valve lifters and shims to ensure correct reassembly in their original locations.
- The valve lifter can be easily removed with a valve wiping tool or magnet.
- The shim can be easily removed with tweezers or a magnet.

**INSPECTION****CAMSHAFT**

Check the cam and journal surfaces of the camshaft for scoring, scratches or evidence of insufficient lubrication.

Check the oil holes in the camshaft for clogging.

Support both ends of the camshaft with V-blocks and check the camshaft runout with a dial gauge.



SERVICE LIMIT: 0.05 mm (0.002 in)

Also inspect the camshaft for wear and damage.

SERVICE LIMITS

IN 35.01 mm (1.42 in)
EX 35.77 mm (1.41 in)

**CAMSHAFT HOLDER**

Inspect the bearing surface of camshaft holder for scoring, scratches or evidence of insufficient lubrication.

Inspect the oil orifices of the holders for clogging.



CYLINDER HEAD/VALVES

CAM CHAIN GUIDE B

Inspect the cam chain support surface of the cam chain guide B.

▶ If it is damaged, replace it.

CAM CHAIN GUIDE B



CAMSHAFT OIL CLEARANCE

Wipe any oil from the journals of the camshaft, by an oil head and camshaft holders. Lay a strip of plastic gauge (width 10 mm) on top of each camshaft journal.



7. Put in the oil
oil gauge

Install the camshaft holder onto the camshaft. Apply engine oil to the threads and seating surfaces of the camshaft holder bolts. Tighten the camshaft holder bolts with the slight easing with oil.

The camshaft holder has the number "12N-20". Temporarily tighten the four bolts of the camshaft holder in the sequence of 1-2-3-4 until the power of the camshaft holder is about 20 N·m.

Then tighten them to the specified torque.



TORQUE 12 N-20 9.2 kgf·m 5 ft·lb

Remove the camshaft holder and take the oil out of the oil gauge.

The wet thickness (determ. NO. 3) is 0.02 mm.

SERVICE LIMIT 0.10 mm 0.004 in

If the oil clearance is 0.10 mm or exceeded, replace the oil at the oil gauge with the oil.

Replace the cylinder head and camshaft holders as a set if the clearance is 0.10 mm or exceeded.



CYLINDER HEAD REMOVAL

Drain the coolant (page 6-4)

Remove the camshaft (page 6-6)

Remove the cylinder crank bolt and sealing washer
Drain coolant from cylinder head and cylinder block

Check that the sealing washer is in good condition
if in doubt, replace

Reinstall the sealing washer and crank bolt

Remove the turbo: turbo, sealing washers at 6 cam
chain tensioner after next page

To water hose up a sealing washer and cam chain
tensioner

Reconnect the water hose

Re move the fuel injection (injector) and the
the pump



Remove the cam chain tensioner, washers



Remove the two 6 mm flange bolts



CYLINDER HEAD/VALVES

Remove the Cylinder Head

Remove the gasket and dowel pins.



Remove the left crankcase cover and left side pulley generator rotor (page 127).

Remove the socket bolt, cam chain guide and roller.

Remove the cam chain and timing sprocket from the crankshaft.



CYLINDER HEAD DISASSEMBLY

Remove the spark plugs from the cylinder head.

Install the tapered roller pin into the left valve lifter stem.

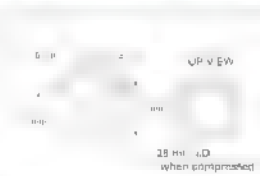
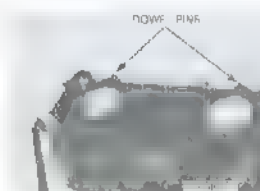
Tools:

*spark plug protector

07HMK-10070002



An equivalent tool can easily be made from a plastic 35 mm film container as shown.



Remove the valve spring retainers using the special tool as shown.

TOOLS

Valve spring compressor 07757-0010000

Valve spring compressor attachment

07952-K1K30101

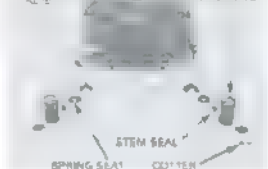
NOTICE

To prevent loss of tension, do not compress the valve springs more than necessary to remove the retainers.

VALVE SPRING COMPRESSOR



VALVE SPRING

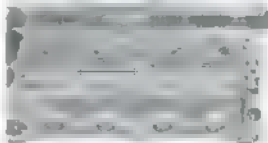


COMBUSTION CHAMBER



Check the valve head for warpage with a straight edge and feeler gauge.

SERVICE LIMIT 0.10 mm (0.004 in)

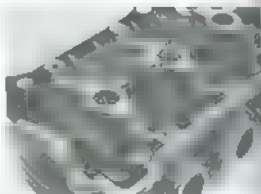


VALVE LIFTER BORE

Inspect each valve lifter bore for scratches or abnormal wear.

Measure each valve lifter bore I.D.

SERVICE LIMIT: .25 mm (.01 in)



VALVE LIFTER

Inspect each valve lifter for scratches or abnormal wear.

Measure each valve lifter O.D.

SERVICE LIMIT: .25 mm (.01 in)



VALVE SPRING

Measure the free valve spring free length.

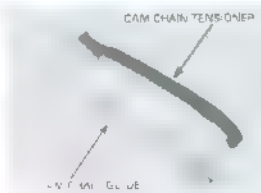
SERVICE LIMITS: 40.9 mm (1.61 in)

Replace the springs if they are shorter than the service limits.



CAM CHAIN TENSIONER/CAM CHAIN

Inspect the cam chain tensioner and cam chain guide for excessive wear or damage. Replace if necessary.



VALVE/VALVE GUIDE

Check that the valve moves smoothly in the guide.
Inspect each valve for bending, burning or abnormal stem wear.

Check valve movement in the guide, measure and record each valve stem O.D.

SERVICE LIMITS:

IN 4.465 mm (0.1758 in)

EX 4.456 mm (0.1754 in)

Lean the guides to remove any carbon deposits before checking clearances.

Lean the reamer from the combustion chamber side of the head and always rotate the reamer clockwise.

TOOL

Valve guide reamer 4.500 mm Ø/HMMT A9L00101

Measure and record each valve guide I.D.

SERVICE LIMIT IN/EX 4.500 mm (0.1772 in).

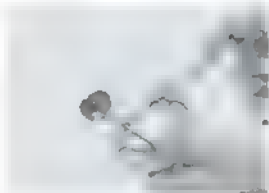
Subtract each valve stem O.D. from the corresponding guide I.D. to obtain the stem-to-guide clearance.

SERVICE LIMITS

IN: 0.075 mm (0.0030 in)

EX: 0.085 mm (0.0033 in)

If the stem-to-guide clearance is out of standard, determine if a new guide with stan and d manual-a would bring the clearance within tolerance. If so, replace any guides as necessary and ream to fit. If the stem-to-guide clearance is out of standard with the new guides, replace the valves and guides.



VALVE GUIDE REPLACEMENT

Grind the replacement valve guides in the proper section of a refrigerator for about 20 hours.
Heat the cylinder head to 100–150°C (212–300°F) with a hot plate or oven.

NOTICE

Do not use a torch to heat the cylinder head or any other part.

Support the cylinder head and drive out the valve guides from the combustion chamber side of the cylinder head.

TOOL

Valve guide driver

071610-4410101

Drive in the guide to the specified depth from the top of the cylinder head.

TOOL

Valve guide driver

071610-082000

SPECIFIED DEPTH

IN 4.5–5.7 mm (0.17–0.23 in)

EX 14.0–15.0 mm (0.55–0.59 in)

1. Lift the cylinder head and place it on the plate.

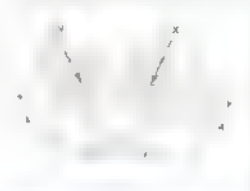
Heat the cylinder head to 100–150°C (212–300°F).
Insert the reamer from the combustion chamber side of the head and always rotate the reamer clockwise.

TOOL

Valve guide reamer, 4.503 mm 071610-4410101

Clean the cylinder head thoroughly to remove any mill scale or dirt.

Reface the valve seat (see following steps).



VALVE SEAT INSPECTION/REFACING

The valves should
be ground if a
valve face is

damaged or
the valve seat
is

Clear the intake and exhaust valves thoroughly to remove carbon deposits.

Apply a light coating of Prussian Blue to the valve seat.

Tap the valve in and seal using a rubber hose or other non-damaging tool.

Remove the valve and repeat the valve seat test.

Repeat the valve seat test for

intake and exhaust.

Repeat the valve seat test if the valve seat

is damaged.

Repeat the valve seat test if the valve seat

- Contact area too high or too low
- Reface the valve seat

The valve seat contact should be within the specified width and even all around the circumference.

STANDARD: 0.80 - 1.10 mm (0.031 - 0.043 in)

SERVICE LIMIT: 1.6 mm (0.06 in)

If the seat width is not within specification, reface the valve seat. (page 8-18)

DAMAGED FACE

UNEVEN SEAT
WIDTH

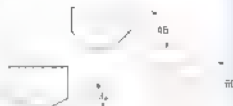
TOO LOW

TOO HIGH

SEAT WIDTH

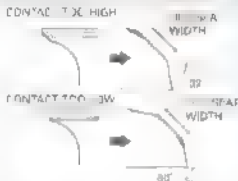
VALVE SEAT REFACING

Valve seat refacing is required on all replaced valve seat refacing equipment is recommended on all refaced valve seats.



If the valve seat is too high, the valve must be lowered using a flat cutter.

If the valve seat is too low, the valve must be raised using a flat cutter for push.



Use a 65-degree angle to remove any roughness or to repair a damaged valve seat.

TOOLS:

Flat cutter 27 mm (1 in.)

4.5 mm (3/16 in.)

Cutter holder 4.5 mm

07780-0010700

07781-0010800 or
equivalent cutter
only available



Use a 32-degree angle to remove the top 1 mm of the existing valve seat material.

TOOLS:

Flat cutter 27 mm (1 in.)

Flat cutter 30 mm (1 1/4 in.)

Cutter holder 4.5 mm

07780-0010800

07780-0010800

07781-0010900 or
equivalent cutter
only available



Use a 60-degree cutter to remove the bottom 7/8 of the seat.

TOOLS

Interior cutter 24 mm

(09 IN/EX)

Cutter holder 4.5 mm

07785-0010000

07781-0010000 or
equivalent cutter
if fully available

Using a 45 degree cutter cut the seat to the proper width.

Make sure that all pitting and irregularities are removed.

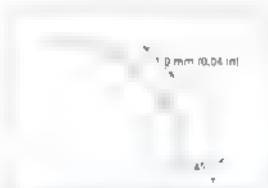
Run in if necessary.

After grinding the seat, apply lapping compound to the valve face and lap the valve using light pressure.

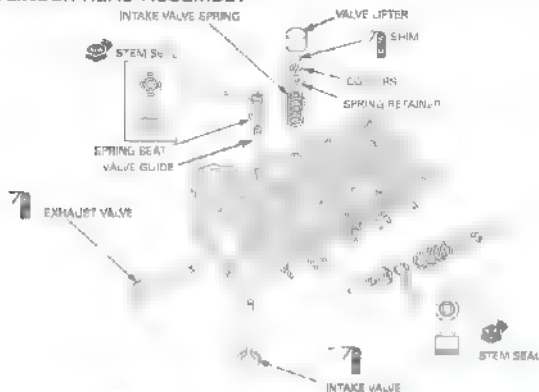
NOTICE

- Excessive lapping pressure may deform or damage the seat.
- Change the angle of lapping tool frequently to prevent uneven seat wear.
- Do not allow lapping compound to enter the guides.

After lapping, wash all residual compound off the cylinder head and valve.



CYLINDER HEAD ASSEMBLY



Blow through all oil passages in the cylinder head with compressed air.

Insert the tappet hole protector into the valve lifter bore.

TOOL

Tappet hole protector

874 MG-SAR 19012

Example of tappet hole protector



Install the valve spring seats

in the valve guide.

Lubricate the valve stems with molybdenum oil solution.

Insert the valve into the valve guide while turning it slowly to avoid damage to the stem seal.



Seal on the cylinder head above.

Install the valve spring with the tightly wound coils facing the combustion chamber.



Install the valve spring retainers.

Install the valve retainers using the spacer bar as shown.

NOTE:

To prevent loss of tension, do not compress the valve spring more than 105 mm (4.1 in.).

TOOLS

Valve spring compressor 07137-00100

Valve spring compressor attachment 07009-KM30101

VALVE SPRING COMPRESSOR



Tip: The procedure for installing the piston assembly is shown in the next section.

Install and tighten the spark plug.

TORQUE: 12 N·m (1.2 kgf-m, 8.8 lbf-ft)



CYLINDER HEAD INSTALLATION

Install the timing belt by aligning the white mark on the crankshaft pulley with the mark on the timing cover.

Install all the other...



Install the cam chain guide and bolt/washer.



Install the washer, air filter drive and support bolt.

Tighten the cam chain guide bolt to the specified torque.

TORQUE

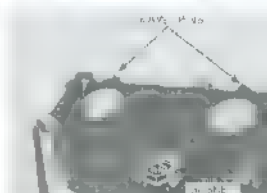
Cam chain guide bolt

32 Nm (23.5 lbf·ft, 9 lbf·ft)

Install the oilion pulse generator rotor and right crankcase cover (page 77).



Install the dowel pins and a new cylinder head gasket as shown.



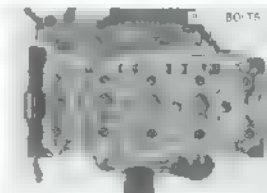
Install the cylinder head onto the cylinder block.

Apply molybdenum disulfide oil solution to the threads and surfaces of the 3 mm bolts with a 200 g (7.1 oz) cap.

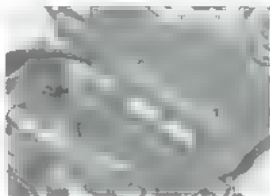
Install the head flange bolts.

Tighten the 3 mm bolts in a crosswise pattern in 2–3 steps to the specified torque.

TORQUE 48 Nm (45.3 lbf·ft, 36 lbf·ft)



Tighten the 8 mm flange bolts.



Install the cam chain tensioner onto the cylinder head.

Tighten the nut to the specified torque.

TORQUE: 10 N·m (9 kg-m, 7 lbf-ft)

Connect the water pump.

Remove the nut, washer.

Install the nut, washer, and lock washer.



CAMSHAFT INSTALLATION

Install the new gasket and cam chain tensioner onto the cylinder head.

Install the new timing washers and tighten the lock set bolts in the specified torque.

TORQUE: 10 N·m (9 kg-m, 7 lbf-ft)

Install the camshaft (see below).



1. Apply the valve oil to the valve stems and valve lifters.

Apply the valve oil to the valve stems and the outer surface of the valve lifters.

Install the shim and valve lifter into the valve lifter bore.



CYLINDER HEAD/VALVES

If the cam sprockets are removed, install the cam sprockets onto the camshafts.

FIGURE 10-10
Pulse generator



- Install the intake cam sprocket with the timing mark (TX) facing downward on the No. 1 cam bolt (see Figure 10-11).
- Install the exhaust cam sprocket with the timing mark (EX) facing outward and the No. 1 cam lobes facing up and out as shown.

FIGURE 10-11 CYLINDER CAM LOBES



FIGURE 10-12 CAM SPROCKET
INTAKE CAM SPROCKET



Clean and apply a locking agent to the cam sprocket bolt threads.
Install the cam sprocket bolts.

Clean and apply a locking agent to the cam crankshaft generator rotor threads.
Install the cam pulse generator rotor and mounting bracket.



Turn the crankshaft clockwise and align the TX mark on the ignition pulse generator rotor with the red mark on the right crankcase cover.



Apply molybdenum oil solution to the camshaft journals of the cylinder head and camshaft holder.

Install the cam shaft over the die camshaft and then install the intake and exhaust camshafts.

- Install each camshaft to the correct bore one with the identification marks.
 Intake camshaft
 EX Exhaust camshaft
- Make sure that the timing marks on the cam sprockets are facing outward and flush with the cylinder head upper surface as shown.

Apply molybdenum oil solution to the camshaft holder as shown.

Insert the camshaft holder into the cylinder head.

Apply engine oil to the intake and exhaust surfaces of the camshaft holder.

Insert the cam shaft holder B and torque both equally from the front side of the cam sprockets. Install the twenty bolts on the cam shaft holder. Finger tighten the bolts.

The camshaft holder has the number 1 through 20.

Install the camshaft holder in the sequence shown in the diagram below. Tighten the bolts in the sequence shown in the diagram below. Tighten the bolts in the sequence shown in the diagram below.

If the holder tilts toward the #1 cylinder during the process, adjust bolts #6, #5, #8 and #7 as necessary to keep the holder level.

When the holder is parallel with the cylinder head, resume tightening the bolts in the sequence specified above.



CYLINDER HEAD, VALVES

Turn the camshaft so that the 0° mark on the timing belt is in line with the 0° mark on the camshaft. Tighten the camshaft against the cylinder head.

TORQUE 12 Nm (1.2 kgf-m, 9 lbf-ft)



Install the parts from job 8 and tighten the bolts.



After the cam sprockets were removed, tighten the 4 bolts, but loose to the specified torque.

TORQUE 20 Nm (2.0 kgf-m, 14 lbf-ft)

Turn the crankshaft clockwise one full CR and tighten the other cam sprocket bolts.



After the 4 bolts were tightened, the camshaft and the timing belt should be adjusted to the specified torque.

TORQUE 12 Nm (1.2 kgf-m, 9 lbf-ft)



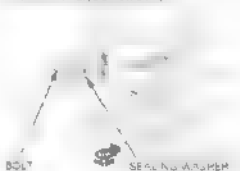
Remove the stopper tool from the cam chain tensioner.

STOPPER TOOL



Insert a new sealing washer and tighten the mounting bolt.
Recheck the valve timing.

CAM CHAIN TENSIONER



Apply oil to the new O-ring, and install it over the cam chain guide.
Install the cam pulse generator into the cylinder head.



Retighten and tighten the mounting bolt securely.



CYLINDER HEAD COVER INSTALLATION

Apply sealant to the cylinder head semi-circular surface as shown.

Fig. 11

Install the cylinder head packing into the groove of the cylinder head cover.

Install the head cover as shown.



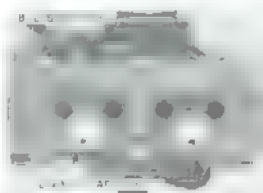
Install the washers with their "UP" mark facing up.

Fig. 12



Install and tighten the cylinder head cover special bolts to the specified torque.

TORQUE: 10 Nm (7.5 kgf-m, 5.4 lbf-ft)



Connect the air supply hoses to the PAIR feed valve covers.

Install the following:
 ignition coil #2-#3 (page 177)
 spark plug cap (page 177)



CAM CHAIN TENSIONER LIFTER

REMOVAL

Remove the cam chain tensioner sealing bolt and sealing washer.

Turn the tensioner shaft fully in (clockwise) and secure it using the suspension pliers (see figure).
 See page 8-7 for details of the tool.

Note the angle
 for direction of

Remove the bolts and cam chain tensioner lifter.
 Remove the gasket.

CAM CHAIN TENSIONER LIFTER



SUSPENSION PLIER

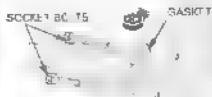


SOCKET BOLTS



INSTALLATION

Install the new gasket and the cam chain
adjuster. Then
install the cam chain adjuster spring into the
valve head.



Install and tighten the mounting bolts securely.

Remove the stopper foot.

Install the new sealing washers and tighten the sealing
bolts securely.

Install the removed parts in the reverse order
of removal.

CAM CHAIN TENSIONER



9. CLUTCH/GEARSHIFT LINKAGE

SERVICE INFORMATION	9-1	CLUTCH	9-4
TROUBLESHOOTING	9-2	GEARSHIFT LINKAGE	9-12
RIGHT CRANKCASE COVER REMOVAL	9-3	SHIFT FORK SHIFTER DRUM	9-13
CLUTCH LEVER	9-4	RIGHT CRANKCASE COVER INSTALLATION	9-14

SERVICE INFORMATION

GENERAL

It is not recommended to use of the clutch gear shift linkage with the clutch in the A position when starting the engine installed in the frame.

Fasten the clutch lever with a screwdriver when the clutch lever is down. This does not allow the clutch lever to move into the clutch lever position when the transmission is on a dry before starting the clutch system.

SPECIFICATIONS

Unit: mm (in)

ITEM	STANDARD	SERVICE LIMIT
Clutch lever free play	10-20 (4/8-12/32)	—
Clutch		
Spring free length	48.8 (1.92)	47.5 (1.87)
Disc thickness	2.97-3.08 (0.115-0.121)	2.8-3.0
Plate warpage	—	0.30 (0.012)
Case outer guide	2-9.9 (1/16-3/4)	4.0 (0.157)
Clutch	1.0-1.5 (0.039-0.059)	1.4 (0.055)
Maximum force to pull in	74.90-109.3 (16.7-24.3)	74.90 (16.7)

TORQUE VALUES

Clutch cable lock nut

28 N·m (20.7 ft·lb)

Apply a locking compound to the threads.

Clutch spring (oil/washer)

12 N·m (9.3 ft·lb), 5 Bolt

Clutch pump (oil/washer) (crankshaft bolt)

5 N·m (3.7 ft·lb), 1 Bolt

Apply a locking compound to the threads.

Clutch pump (oil/washer) (crankshaft bolt)

4 N·m (3.0 ft·lb), 1 Bolt

Apply a locking compound to the threads.

Shift drum (oil/washer) (crankshaft bolt)

4 N·m (3.0 ft·lb), 1 Bolt

Gearshift spindle return spring pin

22 N·m (16.2 ft·lb), 1 Bolt

TOOLS

With center holder

0-24-00-00-2

1/4 inch (6.35 mm) diameter

Driver

07749-001-000

Attachment, 32 X 36 mm

07746-001-000

Attachment, 37 X 40 mm

07736-001-000

Pin, 17 mm

07746-001-000

Pin, 18 mm

07746-001-000

TROUBLESHOOTING

Clutch lever too hard to pull in

- Damaged clutch lifter mechanism
- Faulty clutchifter bearing
- Clutch lifter plate installed improperly

Clutch slips when accelerating

- Worn clutch disc
- Weak clutch springs
- Transmission oil mixed with molybdenum or graphite additive

Clutch will not disengage or motorcycle sneaks with clutch disengaged

- Clutch plate warped
- Loose clutch linkage rod
- Oil level too high
- Improper oil viscosity
- Damaged clutch lifter mechanism
- Clutch lifter plate installed improperly

Hard to shift

- Improper clutch operation
- Improper oil viscosity
- Bent shift fork
- Bent shift fork shaft
- Bent fork claw
- Damaged shift drum cam groove
- Loose stopper plate bolt
- Damaged stopper plate end pin
- Damaged gearshift spindle

Transmission jumps out of gear

- Worn shift drum stopper arm
- Weak or broken shift arm return spring
- Loose stopper plate bolt
- Bent shift fork shaft
- Damaged shift drum cam groove
- Damaged or bent shift forks
- Worn gear engagement dogs or slots

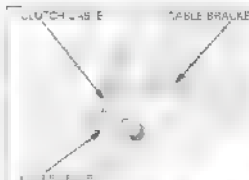
Gearshift pedal will not return

- Weak or broken gearshift spindle return spring
- Bent gearshift spindle

RIGHT CRANKCASE COVER REMOVAL

Drain the engine oil (page 3-18)

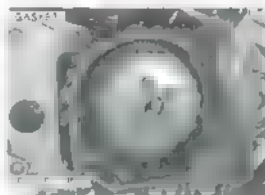
Remove the bolts and clutch cable guide, then disconnect the clutch cable end from the clutch lever lever.



Remove the right crankcase cover 54 bolts and clutch cable guide.



Remove the right crankcase cover 54 bolts and clutch cable guide. Then disconnect the clutch cable end from the clutch lever lever. The clutch cable guide is not needed.



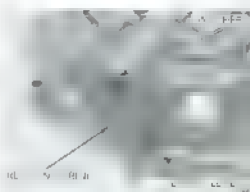
Clear the oil from the clutch lever lever.

CLUTCH/GEARSHIFT LINKAGE

CLUTCH LIFTER LEVER

Remove the clutch lifter lever, return spring and washer from the right crankcase cover.

Check the lifter lever spindle for wear or damage.
Check the return spring for fatigue or damage.



Check the lifter lever for an oil seal leak and wear or damage.

Install the clutch lifter lever with the washer and spring in the reverse order of removal.



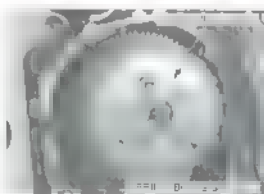
CLUTCH

REMOVAL

Disassemble the clutch assembly from the flywheel.

Remove the clutch disc, pressure plate, and release bearing.

Remove the clutch disc, pressure plate, and release bearing.



Remove the clutch disc.

Remove the clutch disc.

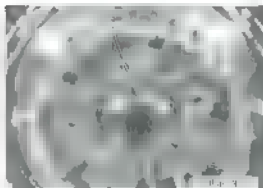
Clutch plates

Spring seat

Ladder spring



Loosen the clutch center lock nut.



Hold the clutch shaft with the clutch center bearing
in place with the lock nut.

NOTE

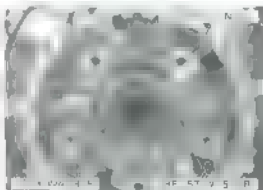
Clutch center bearing

67724-000002
(Equivalent bearing
may be available)

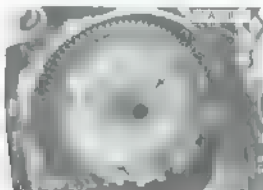


Remove the lock nut.

Remove the clutch shaft from the clutch center bearing.
Remove the clutch shaft from the clutch center bearing.



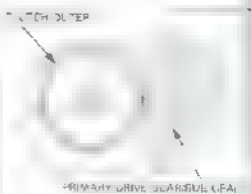
Remove the clutch shaft.



CLUTCH/GEARSHIFT LINKAGE



Align the gear teeth of the selector gears (primary drive gear and sub-gear) by inserting a screwdriver into the gear hole indicated by the punch mark on the sub-gear through the hole in the crankcase, and remove the clutch roller guide.



Remove the oil pump, inner sprocket, bowl/washer. Remove the oil pump drive, driven sprocket and drive chain as an assembly.



INSPECTION

Clutch inner bearing

Remove the inner and the outer bearing as an assembly.

The clearance of the drum and the shaft is 0.15 mm. Also check that the outer race of the bearing fits snugly in the pressure plate.

Recheck the bearing if the inner race does not fit smoothly, quietly, or if the outer race fits loosely in the pressure plate.

Drive the bearing out of the pressure plate.

Drive a new bearing into the pressure plate with its mark side facing out.

TOOLS

Driver: 07749-001000
Attachment: 32 X 35 mm 07746-001000
Pilot: 17 mm 07745-001000

Clutch spring

Measure the clutch spring free length.

SERVICE LIMIT 47.5 mm (1.87 in.)

AFTER BEARING



Clutch center

Check the grooves of the clutch center for damage or wear caused by the clutch plates. Replace if necessary.

CLUTCH CENTER

**Clutch liner plate**

Check the clutch liner plate for damage or surface wear.

CLUTCH LINER

**Clutch disc**

Replace the clutch disc if they show signs of scoring or discoloration.

Measure the disc thickness of each disc.

SERVICE LIMIT 2.8 mm (0.10 in)

CLUTCH DISC

**Clutch plate**

Check each disc plate for warpage on a surface plate using a feeler gauge.

SERVICE LIMIT 0.30 mm (0.012 in)

CLUTCH PLATE

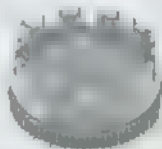


CLUTCH/GEARSHIFT LINKAGE

Clutch outer/clutch outer guide

Check for signs of wear on clutch outer guide area caused by the clutch discs.
Replace if necessary.

CLUTCH OUTER



Measure the O.D. and I.D. of the clutch outer guide.

SERVICE LIMITS

O.D. 34.97 mm (1.377 in)

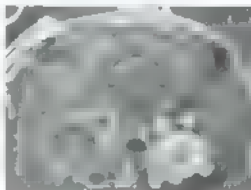
I.D. 28.01 mm (0.986 in)



Mainshaft

Measure the mainshaft O.D. of the clutch outer guide sliding surface.

SERVICE LIMIT 26.98 mm (0.983 in)



CLUTCH OUTER NEEDLE BEARING REPLACEMENT

Press the needle bearing out of the clutch outer along the splines hole.

TOOLS:

Driver

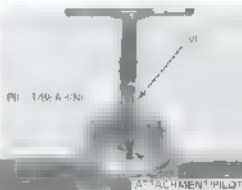
07745-0010000

Attachment, 32 X 40 mm

07746-0012000

Pilot, 35 mm

07746-0014000



Press a new needle bearing in to the clutch cover so
it fits snugly. The needle bearing is marked 0.0
in D16.0.0.0. For the all purpose drive sprocket
and note of the oil hole position. See also...

TOOLS

Deutscher

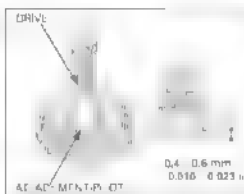
Attachment 27 X 40 mm

Pilot 38 runs

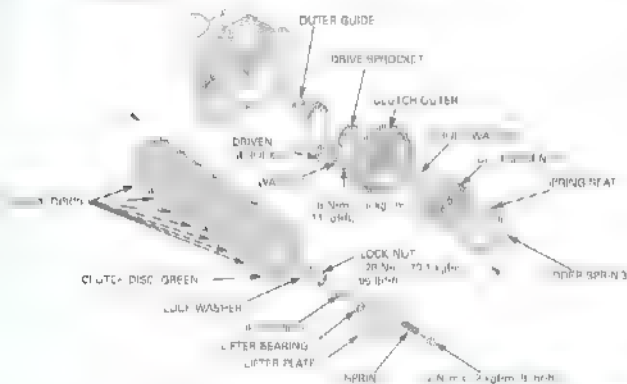
07749-M10007

027417 UK19200

02745-004000

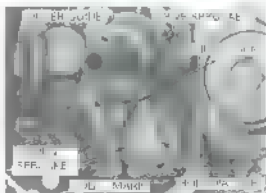


INSTALLATION



• ലിങ്ക് സ്റ്റാർട്ട് ചെയ്താൽ

Install the clutch outer guide, oil pump (self-driven) sprocket and drive chain as an assembly.



CLUTCH/GEARSHIFT LINKAGE

Apply a locking agent to the threads of the oil pump driven sprocket bolt.
Tighten the driven sprocket bolt to the specified torque.

TORQUE 15 Nm (1.5 kgf-m, 11 ft-lb)



Apply the primary drive gear to the clutch outer gear and install the clutch outer gear.

Install the clutch outer gear.

Be sure that the primary drive gear is properly meshed with the clutch outer gear while installing the clutch outer gear to properly seat it.

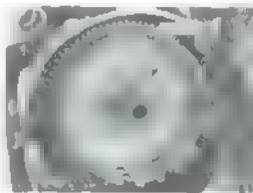
Make sure that the primary drive gear of the clutch outer is flush with the primary drive subgear.
Recheck the clutch outer gear meshing once again.

CLUTCH OUTER



PRIMARY DRIVE GEAR-SUB GEAR

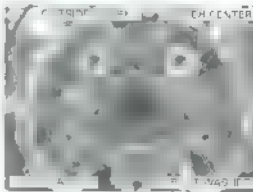
Install the washer onto the clutch outer.



Install the clutch outer gear.

Install the clutch outer gear.

Install the lock washers with the OIL PUMP gear being out.



Install the new pin as follows:

Hold the clutch cover with the clutch cover bolts, then tighten the lock nut to the specified torque.

TOOL

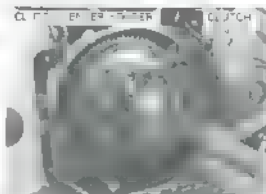
Clutch cover holder

87724-006002

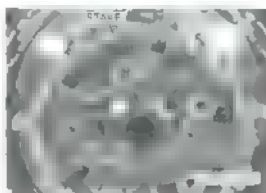
(Equivalent common)

87724-006002

TORQUE 128 N·m (13.1 kgf-m, 94 lbf-ft)



Slide lock nut into the mainshaft groove with a punch.

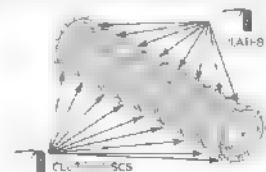


Apply engine oil and install the spring seat and buffer spring.



Oil the clutch disc and plates with engine oil.

Stack the clutch disc and plates alternately.



CLUTCH/GEARSHIFT LINKAGE

Install the outer clutch disc cover (Green) in the shallow slot on the clutch cover.

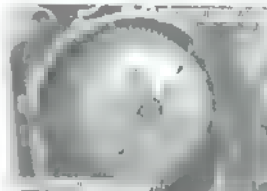
Slide clutch to gear.



Install the pressure plate.
Install the clutch springs and spring bolts.
Tighten the bolts in a cross pattern (shown in 3 steps).
Then tighten the bolts in the specified torque.

TORQUE 13 Nm (12 kgfcm, 9 lbf-ft)

Install the right shiftkicker cover (page 8).



GEARSHIFT LINKAGE

GEARSHIFT LINKAGE REMOVAL

Remove the following:
- Right crankcase cover (page 8-9)
- Clutch assembly (page 9-8)

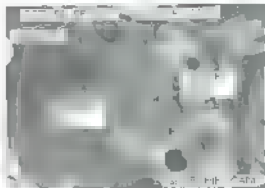
Mark the location of the gearshift linkage.



Put the gearshift rod in the position that it was in out of the crankcase.



- Remove the following:
- Stopper arm (model 600)
 - Stopper arm
 - Return spring
 - Washer
 - Lock pins
 - Shift pin
 - Gearshift pin



GEARSHIFT LINKAGE INSPECTION

- Check the gearshift spindle for wear, damage or bending.
- Check the return spring for fatigue or damage.



SHIFT FORK/SHIFT DRUM

Apply the wheel

REMOVAL

- Separate the cable (see Index, page 1-2).

Remove the shift fork and shift fork



Remove the shift drum.



SHIFT DRUM/SHIFT FORK INSPECTION

Check the shift fork guide pin for abnormal wear or damage.

Measure the shift fork ID.

SERVICE LIMIT 12.63 mm (0.497 in.)

Measure the shift fork stem thickness.

SERVICE LIMIT 9.8 mm (0.39 in.)



Measure the shift fork shaft OD.

SERVICE LIMIT 11.96 mm (0.471 in.)

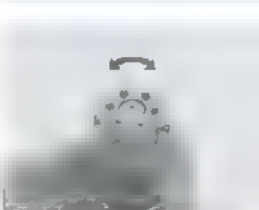


Inspect the shift drum guide grooves for abnormal wear or damage.

Turn the outer race of the shift drum bearing with your finger.

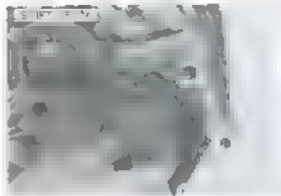
The bearing should turn smoothly and freely without excessive play.

If necessary, replace the bearing.



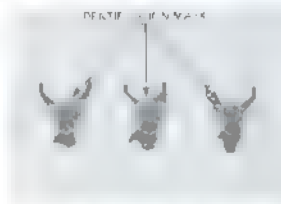
INSTALLATION

Install the shift drum into the lower crankcase.



The shift drum have letter mark on it.

- "R" for right
- for left
- "C" for center



Insert the shift forks into the shift drum guide groove with the identification marks facing toward the right side of the engine and insert the fork shaft.



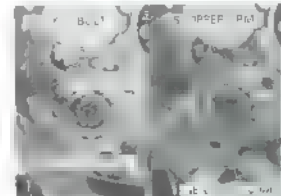
GEARSHIFT LINKAGE INSTALLATION

Install the following:

- Washer
- Retaining ring
- Stopper arm
- Socket bolt

Tighten the stopper arm socket bolt to the specified torque.

TORQUE 12 N·m (1.2 kgf-m, 9 lbf-ft)



CLUTCH/GEARSHIFT LINKAGE

1.4.2021| 11:30
1.4.2021| 11:30
1.4.2021| 11:30

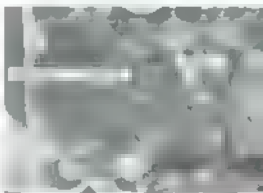
Apply a locking agent to the yamachik's arm socket
ball threads.

$\frac{d}{dt} \left(\frac{1}{2} m v^2 \right) = -\frac{d}{dt} \left(\frac{1}{2} k x^2 \right)$

TORQUE 23 N-m (2.3 kgf-m, 17 lbf-ft)

[illegible]

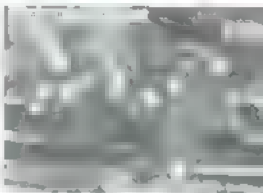
with the park and adjacent area.



... a variable cost in the long run with the
... on the general principle
... the fact that the price level is not stable and
...

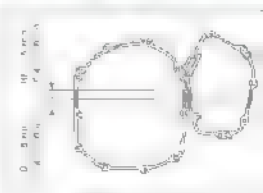
TORQUE 20 N-m (2.0 kgf-m, 14 lbf-ft)

Install the clutch assembly, page 14 14

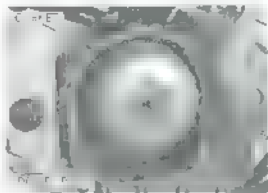


RIGHT CRANKCASE COVER INSTALLATION

Apply a sealant to the mating surfaces of the railhead as shown.



Install the two dowel pins.



Install the right crankcase cover with turning the lifter arm clockwise to engage the lifter arm groove with the pin on the lifter.



Set the clutch cable guide into the right crankcase cover.

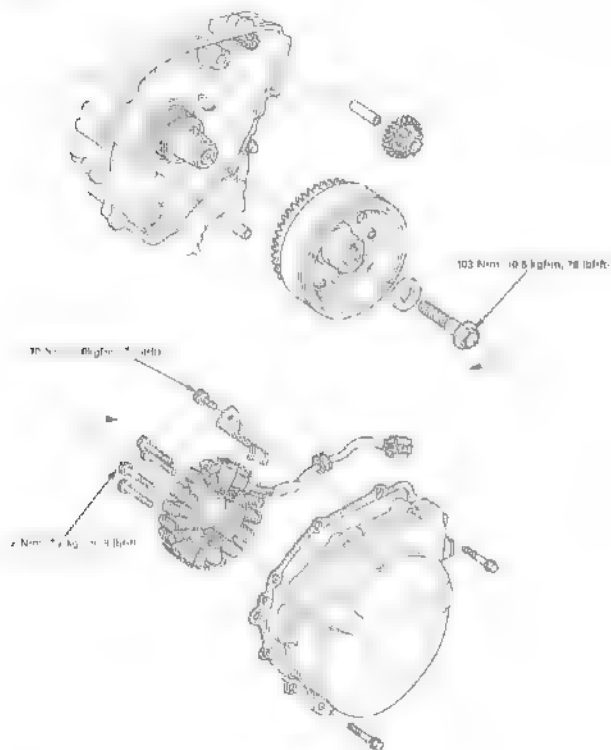


Install and tighten the right crankcase cover six bolts in a star pattern.
Connect the clutch cable end to the clutch lifter lever.

Fit the recommended engine oil (page 3-4).

Install the removed parts in the reverse order of removal.





10 ALTERNATOR/STARTER CLUTCH

SERVICE INFORMATION	10-1	FLYWHEEL REMOVAL	10-3
TROUBLESHOOTING	10-1	STARTER REPLACEMENT	10-5
ALIGNMENT OF GEAR TOOTH	10-1	FLYWHEEL REINSTALLATION	10-7
CLUTCH	10-2	ALIGNMENT OF GEAR TOOTH	10-1

SERVICE INFORMATION

GENERAL

SPECIFICATIONS

姓名	性别	年龄	职业	住址	电话
张三	男	35	教师	北京市海淀区中关村大街100号	13910123456
李四	女	28	医生	北京市朝阳区三里屯大街50号	13801012345
王五	男	45	工程师	上海市浦东新区世纪大道100号	13621012345
赵六	女	30	记者	广州市天河区珠江新城100号	13530123456
孙七	男	50	公务员	北京市东城区东大街100号	13901012345
周八	女	25	学生	浙江省杭州市西湖区文三路100号	13740123456
吴九	男	40	商人	广东省深圳市福田区中心区100号	13601012345
郑十	女	38	律师	上海市黄浦区南京东路100号	13921012345
陈十一	男	22	程序员	北京市昌平区回龙观100号	13810123456
冯十二	女	32	设计师	广州市海珠区江南大道100号	13540123456
朱十三	男	48	教授	上海市徐汇区淮海中路100号	13630123456
徐十四	女	27	护士	北京市西城区西大街100号	13930123456
马十五	男	33	销售经理	广东省深圳市南山区科技园100号	13750123456
朱十六	女	36	作家	上海市静安区南京西路100号	13640123456
李十七	男	29	产品经理	北京市丰台区右安门100号	13820123456
王十八	女	42	心理咨询师	广州市越秀区东风东路100号	13550123456
张十九	男	37	翻译	上海市虹口区四川北路100号	13650123456
赵二十	女	24	实习生	北京市昌平区回龙观100号	13940123456

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Table 1. *Continued*

TROUBLESHOOTING

Programa de Pós-Graduação em Física

ALTERNATOR COVER REMOVAL

Remove the alternator cover (page 7).

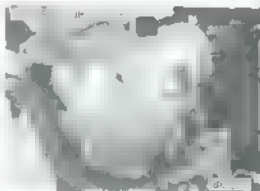
Disconnect the alternator 3P connector.

3P CONNECTOR



Remove the alternator cover 54 bolts and alternator cover.

Fastening the alternator cover 54 bolts and alternator cover.



Remove the bracket and drive gear.



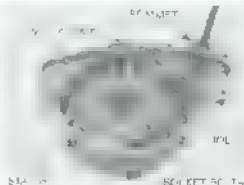
STATOR

REMOVAL

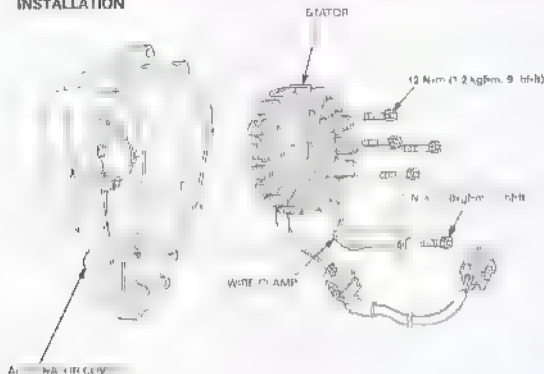
Remove the alternator wiring harness from the alternator.

Remove the socket bolt and stator wire clamp.

Remove the socket bolts and stator.



INSTALLATION



ALTERNATOR

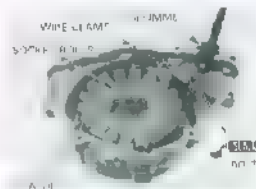
1. Tighten the alternator mounting bolt.

2. Apply a torque of 12 Nm (1.2 kgf-m, 9 lbf-ft) to the alternator mounting bolt. The torque value is 12 Nm (1.2 kgf-m, 9 lbf-ft) for the alternator mounting bolt. The torque value is 10 Nm (1.0 kgf-m, 7 lbf-ft) for the alternator mounting bolt.

TORQUE 12 Nm (1.2 kgf-m, 9 lbf-ft)

3. Install the wire clamp and tighten the bolt to the specified torque.

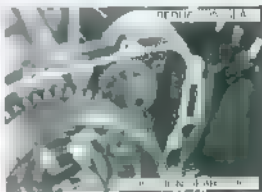
TORQUE 10 Nm (1.0 kgf-m, 7 lbf-ft)



FLYWHEEL REMOVAL

1. Remove the alternator mounting bolt.

2. Remove the starter reduction gear shaft and the flywheel.



ALTERNATOR/STARTER CLUTCH

Hold the flywheel using the flywheel holder, then remove the flywheel bolt.

TOOL

Flywheel holder

87725-8046-000
(Equivalent equipment available)

Remove the washers.



Remove the flywheel using the special tool.

TOOL

Rotor puller

07733-00200-01 or
07933-31950-00



Remove the woodruff key.



Check the starter reduction gear and shaft for wear or damage.



STARTER CLUTCH

INSPECT ON

Check the operation of the one-way clutch by turning the driven gear.
You should be able to turn the driven gear counter clockwise smoothly, but the gear should not turn clockwise.

DISASSEMBLY

Remove the starter driven gear by turning it counter clockwise.

Hold the flywheel with a flywheel holder and remove the starter clutch mounting bolt.

TOOL

Flywheel holder

DT775-0040000
(equivalent number
daily available)

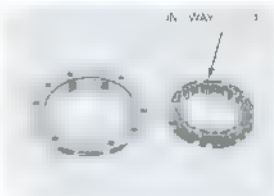
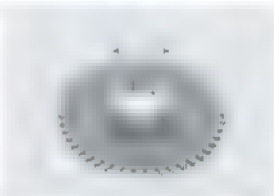
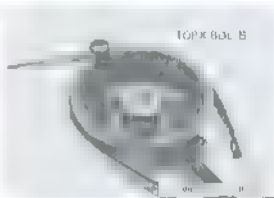
Remove the starter one way clutch assembly.

Check the starter driven gear for abnormal wear or damage.

Measure the starter driven gear bore O.D.

SERVICE LIMIT 51.084 mm (2.0148 in.)

Check the one-way clutch for wear or damage and replace if necessary.

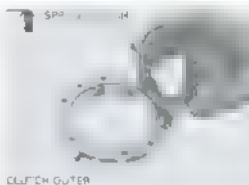


ALTERNATOR/STARTER CLUTCH

ASSEMBLY



Apply a torque of 10 Nm (7.0 kg-m or 12 lb-ft) to the drive gear. Install the sprag clutch into the starter clutch outer with the hinge side facing out.



Install the starter drive gear to the drive wheel and the drive wheel.



Apply a roller finger to the alternator or starter clutch and hold the flywheel with a flywheel holder, and tighten the studs with the wing bolts.

TOOL

Flywheel holder

07125-0040000

(Equivalent component available in U.S.A.)

TORQUE 15 N·m {1.5 kgf·m 2 ft·lb}

Install the starter driven gear onto the one-way clutch while turning it counterclockwise.

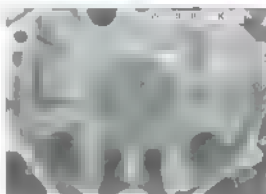
Recheck the one-way clutch operation.

You should be able to turn the driven gear counterclockwise smoothly, but the gear should not turn clockwise.



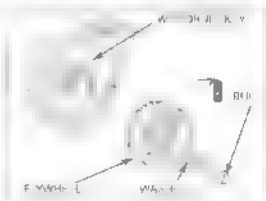
FLYWHEEL INSTALLATION

Remove the flywheel from the crankshaft. Then install the woodruff key on the crankshaft.



Install the flywheel aligning the key way in the flywheel with the woodruff key on the crankshaft.

Apply oil to the flywheel oil retention surface on the flywheel. Then install the washer on the flywheel cap.



ALTERNATOR/STARTER CLUTCH

Hold the flywheel using the flywheel holder, then tighten the bolt to the specified torque.

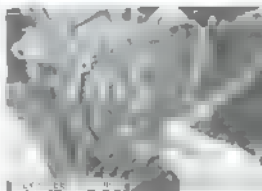
TOOL

Flywheel holder

83775-8040000

(Equivalent commercially available in U.S.A.)

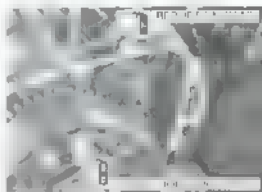
TORQUE 183 N·m (13.5 kg-m, 75 lbf-ft)



Apply molybdenum disulfide grease to the starter reduce gear shaft.

Apply to the gear shaft.

Apply to the gear shaft.



ALTERNATOR COVER INSTALLATION

Apply sealant to the mating surface of the alternator cover.

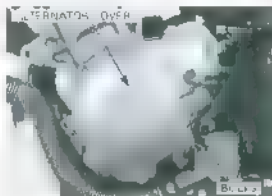
Apply sealant.

Install the cover pin and new dust seal.



Install the alternator cover.

Box all air intake components only.

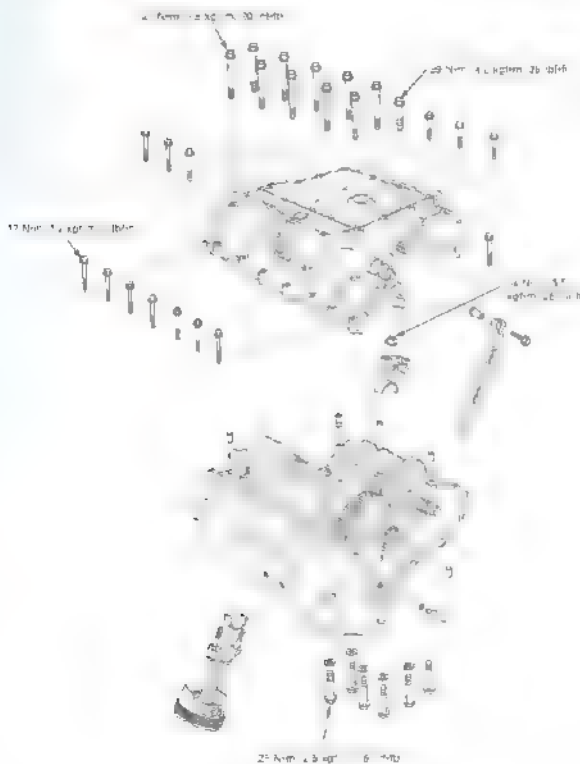


Connect the alternator to the battery ground.

Install the air filter cover (page 2-2).

IP CONNECTOR





11. CRANKCASE/PISTON/CYLINDER

SERVICE INFORMATION	11-1	PISTON CONNECTING ROD	11-4
TROUBLESHOOTING	11-2	CRANKSHAFT	11-7
CRANKCASE SEPARATION	11-3	CRANKCASE COMBINATION	11-12

SERVICE INFORMATION

GENERAL

- * The following parts must be removed before separating the crankcase

- Alternator/belt (Section 7)
- Clutchgearshift linkage (Section 8)
- Cylinder head (Section 9)
- Engine (Section 9)
- Oil pump (Section 4)

SPECIFICATIONS

[illegible]

CRANKCASE/PISTON/CYLINDER

TORQUE VALUES

Crankcase bolt, 10 mm
1 mm
8 mm
6 mm

Use torque wrench

28 N.m (4.0 kgf.cm, 20 lbf.ft)
2 N.m (0.3 kgf.cm, 0.2 lbf.ft)
28 N.m (2.5 kgf.cm, 1.5 lbf.ft)
12 N.m (1.2 kgf.cm, 0.9 lbf.ft)
33 N.m (3.4 kgf.cm, 2.4 lbf.ft)

Apply grease to all parts

Apply oil to all surfaces

TROUBLESHOOTING

Cylinder compression is too low, or engine is hard to start

- Blown cylinder head gasket
- Worn, stuck or broken piston ring
 - Oil on carbon ring, etc. is present
- Old valve is stuck or air intake valve stuck

Cylinder compression is too high, or engine overheats or smokes

- Carbon deposits on the cylinder head and/or rings

Piston sounds

- Worn cylinder, piston wall or piston ring
- Worn piston pin, skirt and piston pin
- Worn connecting rod small end

Excessive noise

- Worn, stuck or broken piston ring
- Worn valve stem seal

Excessive noise

- Worn connecting rod big end bearing
 - Oil on the pin
- Worn crankshaft main journal bearing
 - Worn crankshaft oil pump

Engine vibration

- Excessive air intake noise

CRANKCASE SEPARATION

Remove the
oil pan (10)
and the
oil filter
(11) and
oil filter
base (12).
Remove the
oil pan (10) and
oil filter base
(12).

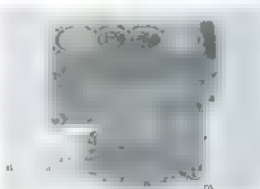
Refer to Service information (page 11-3) for removal of necessary parts before separating the oil pan.

Remove the sealing plug and O-ring.



Loosen the seven 8 mm bolts and 6 mm bolt in a clockwise pattern in 2 or 3 steps.

Remove the bolts and sealing washers.



Place the engine with the upper side down.
Loosen the 8 mm bolts, 6 mm bolts and 16 mm bolts
in a clockwise pattern in 2 or 3 steps.
Remove the bolts and sealing washers.



Separate the lower crankcase from the upper
crankcase.

Remove the three dowel pins and two oil drillings.



Clean any sealer off of the crankcase mating surfaces.

PISTON/CONNECTING ROD

PISTON/CONNECTING ROD REMOVAL

Mark the bearing caps and bearings as you remove them to indicate the correct cylinder for reassembly.

Remove the connecting rod bearing cap nuts and bearing caps.

Tighten the side of the cap lightly if the bearing cap is hard to remove.

Remove the piston pin.

Remove the piston/connecting rod assembly from the top of the cylinder.

PISTON REMOVAL

Remove the piston pin clip.

Push the piston pin out of the piston and connecting rod and discard it.

PISTON DISASSEMBLY

Spread each piston ring and remove it by lifting up at a point opposite the gap.

Remove any carbon deposits from the piston ring groove.

BEARING CAPS



PISTON PIN

CLIP



PISTON RING



PISTON RING



PISTON INSPECTION

Temporarily install the piston rings to their proper position with the mark facing up.

Measure the piston ring-to-ring groove clearance with the rings pushed into the grooves.

SERVICE LIMITS

Top: 0.08 mm (0.003 in)

Second: 0.17 mm (0.003 in)



Insert the piston ring squarely into the bottom of the cylinder and measure the ring end gap.

SERVICE LIMITS

Top: 0.5 mm (0.02 in)

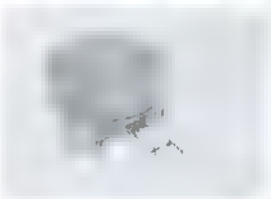
Second: 0.7 mm (0.03 in)

Oil side rail: 0.8 mm (0.04 in)



Measure the piston pin bore.

SERVICE LIMIT 17.63 mm (0.693 in)



Measure the diameter of the piston at 15 mm (0.6 in) from the bottom and 90 degrees to the piston pin hole.

SERVICE LIMIT 76.50 mm (2.991 in)



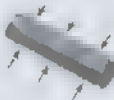
CRANKCASE/PISTON/CYLINDER

Measure the O.D. of the piston pin.

SERVICE LIMIT 18.98 mm (0.748 in)

Calculate the pin to skirt clearance.

STANDARD 0.002 - 0.015 mm (0.0001 - 0.0006 in)



CYLINDER INSPECTION

Inspect the top of the cylinder for wearage.

SERVICE LIMIT 0.06 mm (0.002 in)



CYLINDER INSPECTION

Inspect the cylinder bore for wear or damage.

Measure the cylinder O.D. in X and Y axis at three levels.

Take the maximum reading to determine the cylinder wear.

SERVICE LIMIT 71.10 mm (2.796 in)

Calculate the piston to cylinder clearance.

Take maximum reading to determine the clearance.

Refer to page 17-5 for measurement of the piston O.D.

STANDARD 0.018 - 0.054 mm (0.0006 - 0.0021 in)



Calculate the upper and out of round at three levels in X and Y axis. Take the maximum reading to determine round.

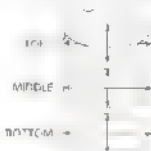
SERVICE LIMITS:

Taper 0.10 mm (0.004 in)
Out of round 0.10 mm (0.004 in)

The cylinder must be rebored and an oversize piston fitted if the service limits are exceeded.

The following oversize pistons are available:
0.25 mm (0.010 in)

The piston to cylinder clearance for the oversize piston must be: 0.015 - 0.050 mm (0.0006 - 0.0020 in)



CONNECTING ROD INSPECTION

Measure the connecting rod at full and mid load.

SERVICE LIMIT 17.03 mm (0.670 in)



SIDE CLEARANCE INSPECTION

Measure the connecting rod side clearance.

SERVICE LIMIT 0.30 mm (0.012 in)

If the clearance exceeds the service limit, replace the connecting rod.

Recheck and still out of fit it replace the crankshaft.



CRANKPIN BEARING INSPECTION

Clean off any oil from the bearing inserts and crankpin.

Carefully install the crankshaft onto the upper crankcase.

Set the connecting rod to the crankpin.

Put a strip of plastic 100 mm lengthwise on the crankpin, avoiding the oil hole.



CRANKCASE/PISTON/CYLINDER

Carefully install the bearing cap on the crankshaft.

Apply oil to the contact surfaces of the bearing cap and the crankshaft.

TORQUE 34 Nm (25 kgf-m, 25 lbf-ft)



Remove the nuts and bearing cap.

Measure the compressed clearance at its widest point on the crankpin to determine the oil clearance.

If the oil clearance exceeds the service limit, select the correct replacement bearings.



CRANKPIN BEARING SELECTION

Record the connecting rod ID code number (1 or 2). Measure the ID with the bearing ID installed without rotating them.

If you are replacing the crankshaft, record the corresponding crankpin ID code number (A or B).



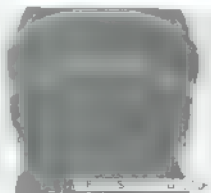
CONNECTING ROD ID CODE

Insert A or B

If you are bluing the crankshaft, record the crankpin ID code number.

Mark the ID of the replacement bearing cap.

Record the ID of the cap and the ID of the replacement bearing cap.



CRANKPIN BEARING SELECTION TABLE

Unit: mm (in)

		CRANKP. INC ROD LD. CODE					
		7			3		
		19.00	25.00	35.00	39.00	39.00	39.00
		1.54	1.56	1.37	1.55	1.55	1.55
CRANKPIN CODE	A	26.187 1.4239	35.503 1.4371	E Yellow	D Green	C Brown	B Dark
	B	26.187 1.4239	35.503 1.4371	E Yellow	D Green	C Brown	B Dark
	C	26.187 1.4239	35.503 1.4371	E Yellow	D Green	C Brown	B Dark
	D	26.187 1.4239	35.503 1.4371	E Yellow	D Green	C Brown	B Dark

BEARING THICKNESS

A Blue	Thick
B Black	1
C Brown	2
D Green	3
E Yellow	Thin

NOTICE

After the oil pump is installed, check the oil level. If the oil level is low, add oil to the correct level. Do not overfill the oil pan.

BEARING INSTALLATION

Clean the bearing after replacing the oil pump. Install the bearing on the crankpin. Use a bearing puller to remove the bearing from the crankpin. Do not use a screwdriver to pry the bearing out of the crankpin.

IDEAL PISTON RING



BEARING



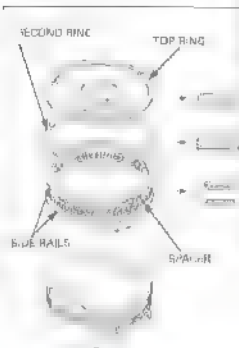
PISTON ASSEMBLY

Carefully install the piston rings into the piston ring grooves with their marking facing up.

- Apply oil to the piston rings.
- Avoid piston and piston ring damage during installation.
- Install the piston rings with the marking facing up.
- Do not mix the top and second rings; top ring is narrower than the second ring in width.

Stagger the piston ring end gaps 120° apart from each other.

Stagger the side rail end gaps as shown.



PISTON INSTALLATION

Apply molybdenum oil solution to the connecting rod small end inner surfaces and piston pin outer surfaces.

Insert the piston pin into the piston and connecting rod.

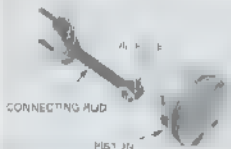
Install new piston pin clips into the grooves of the piston pin bore.

- Make sure that the piston pin clips seat securely.
- Do not align the piston pin clip and gap with the piston pin bore.

Apply engine oil to the cylinder wall and piston and connecting rod.

Install the piston/connecting rod assembly into the cylinder using a commercially available piston ring expander.

1 "IN" MARK



PISTON PIN



NOTICE

- While installing the piston, be careful not to damage the cylinder sleeve or the connecting rod.
- Be careful not to damage the cylinder sleeve and crankpin with the connecting rod bolt threads.

Use the handle of a plastic hammer to tap the piston into the cylinder.

Apply molybdenum oil solution to the crank pin bearing surfaces.

Install the bearing cap.

Ensure that the marks on the caps are aligned with the marks on the connecting rods.

Apply oil to the connecting rod nuts, seats and mating surfaces.

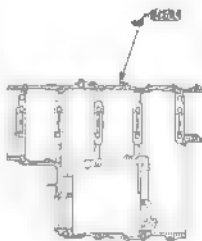
Install the connecting rod caps and tighten the nuts gradually and alternately then tighten them to the specified torque.

TORQUE 34 Nm (3.5 kgfm, 25 lbf·ft)

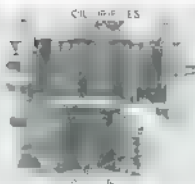


CRANKCASE COMBINATION

Apply a light, but thorough, coating of liquid sealer to the crankcase mating surfaces. Refer to the following figure for the correct application of the sealer. The correct application of the sealer is shown in the following figure.



Install the three dowel pins. Install all oil drains aligning their cut-out with the oil hole in the upper crank web.



Install the lower crankcase onto the upper crankcase.
Clean the new crankcase 8 mm bolts thoroughly with solvent and blow them dry.
Apply oil to the 8 mm bolt threads and seating surface and install them.
Install the 10 mm bolt, 8 mm bolts.

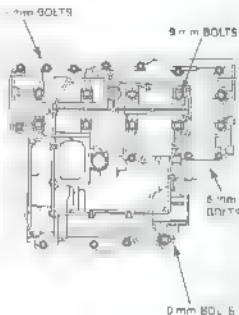
Make sure the upper and lower crankcase are seated securely.

From the inside to outside, tighten the lower crankcase 8 mm bolts (main journal bolts) in a crisscross pattern in 2 or 3 steps.

TORQUE: 27 N·m (2.8 kgf·m, 20 lbf·ft)

Tighten the 10 mm bolt to the specified torque, and then tighten 8 mm.

TORQUE: 10 mm bolt: 38 N·m (4.0 kgf·m, 28 lbf·ft)
8 mm bolt: 32 N·m (3.2 kgf·m, 23 lbf·ft)



Sealing washers

Install the upper crankcase 8 mm bolts and 6 mm bolts with new sealing washers.

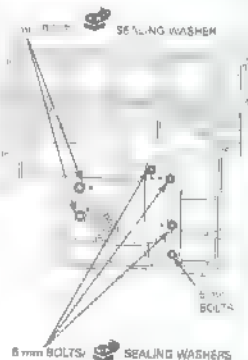
Tighten the 8 mm bolts in a crisscross pattern in 2 or 3 steps.

TORQUE: 24 N·m (2.4 kgf·m, 17 lbf·ft)

Tighten the 6 mm bolts in a crisscross pattern in 2 or 3 steps securely.

Apply a locking agent to the set plate bolt threads.
Install the mainshaft bearing set plate with its "OIL SIDE" mark facing out.
Install and tighten the bolts to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)



CRANKCASE/PISTON/CYLINDER

Apply clean engine oil to the new O-ring and install it to the sealing plug.

Install the sealing plug in the crankcase.

Install the removed parts in the reverse order of removal.





12. CRANKSHAFT/TRANSMISSION

SERVICE INFORMATION

12-1

CRANKSHAFT

12-3

TROUBLESHOOTING

12-2

TRANSMISSION

12-9

SERVICE INFORMATION

GENERAL

- The crankshaft must be separated to service the crankshaft and the main bearing cap. Refer to the section for instructions on separating the crankshaft.
- Be careful not to damage the crankshaft when separating the crankshaft from the main bearing cap. The crankshaft is a precision-machined part and should be handled with care.
- Make sure the crankshaft is properly aligned with the main bearing cap. The crankshaft should be aligned with the main bearing cap before the main bearing cap is bolted to the crankshaft. See the diagram for the correct alignment.
- The crankshaft should be checked for wear and damage. The crankshaft should be replaced if it is worn or damaged. See the section for instructions on replacing the crankshaft.
- The oil to the main bearing cap should be checked. The oil should be replaced if it is dirty or low. See the section for instructions on replacing the oil.

SPECIFICATIONS

ITEM		STANDARD				REPLACE LIMIT
Crankshaft	Stroke	95	95	95	95	95 (0.95)
	Journal	95	95	95	95	95 (0.95)
Main bearing	Journal	95	95	95	95	95 (0.95)
	Journal	95	95	95	95	95 (0.95)
Crankshaft	Stroke	95	95	95	95	95 (0.95)
	Journal	95	95	95	95	95 (0.95)
Main bearing	Journal	95	95	95	95	95 (0.95)
	Journal	95	95	95	95	95 (0.95)
Crankshaft	Stroke	95	95	95	95	95 (0.95)
	Journal	95	95	95	95	95 (0.95)
Main bearing	Journal	95	95	95	95	95 (0.95)
	Journal	95	95	95	95	95 (0.95)
Crankshaft	Stroke	95	95	95	95	95 (0.95)
	Journal	95	95	95	95	95 (0.95)
Main bearing	Journal	95	95	95	95	95 (0.95)
	Journal	95	95	95	95	95 (0.95)
Crankshaft	Stroke	95	95	95	95	95 (0.95)
	Journal	95	95	95	95	95 (0.95)
Main bearing	Journal	95	95	95	95	95 (0.95)
	Journal	95	95	95	95	95 (0.95)
Crankshaft	Stroke	95	95	95	95	95 (0.95)
	Journal	95	95	95	95	95 (0.95)
Main bearing	Journal	95	95	95	95	95 (0.95)
	Journal	95	95	95	95	95 (0.95)

TORQUE VALUES

CONNECTING ROD
Mainshaft bearing set plate oil

Crank 1 14 ft. lb. 19 Nm
T2 1 2 14 ft. lb. 19 Nm

TOOLS

Driver 40 mm x 12
+ 60 mm x 12
Attachment B collar

07745-3037 10
07745-3037 10
07745-3037 10

TROUBLESHOOTING

Excessive noise

- Worn connecting rod big end bearing
- Bent connecting rod
- Worn crankshaft main journal bearing
- Worn mainshaft bearing

Hard to shift

- Improper clutch operation
- Incorrect adjustment of weight
- Incorrect clutch adjustment
- Bent shift fork
- Bent fork shaft
- Bent fork claw
- Damaged shift drum cam groove
- Bent shift spindle

Transmission jitters on 1st gear

1. 1st gear 1st gear 1st gear
1st gear 1st gear 1st gear
1st gear 1st gear 1st gear
1st gear 1st gear 1st gear
1st gear 1st gear 1st gear

Engine vibration

- Excessive crankshaft output

CRANKSHAFT

Be careful not to damage the bearing caps.

REMOVAL

Mark the bearing caps and bearings as you remove them to indicate the correct cylinder for reassembly.

Remove the connecting rod bearing cap and bearing caps.
Tap the side of the cap lightly if the bearing cap is stuck.

Remove the crankshaft.

Remove the main journal bearings from both the crankshaft.

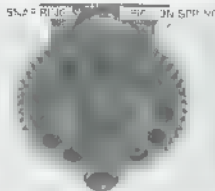


Check the primary drive gear and sub-gear teeth for abnormal wear or damage.

PRIMARY DRIVE SUB-GEAR REMOVAL

Remove the snap ring and friction spring.

Remove the primary drive sub-gear, gear springs and stopper pins.

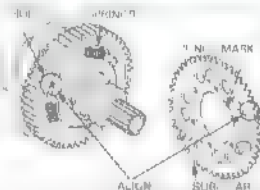


PRIMARY DRIVE SUB-GEAR INSTALLATION

Install the stopper pins and gear springs into the primary drive gear as shown.

Apply molybdenum oil solution to the pin gear sliding surface and friction spring sliding surface. Temporarily install the sub-gear by aligning the punch mark with the hole in the primary drive gear.

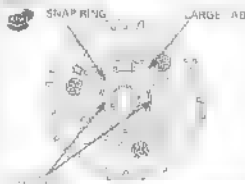
Install the friction spring onto the sub-gear.



Install the sub gear onto the primary drive gear so that it evenly touches the primary drive gear by prying the sub gear with a 6 mm pin or screwdriver that is the stoppers on the reverse side of the sub gear are pushed against the gear springs.



Install a new snap ring into the ring groove in the crankshaft sub-hub with the end gap at right angle to the crankshaft sub-hub by aligning the large tab edge with the sub-gear groove as shown.



STARTER CLUTCH NEEDLE BEARING REPLACEMENT

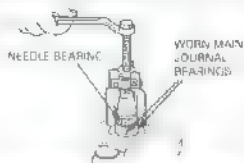
Remove the needle bearing with a commercially available universal bearing puller.

TOOL

Universal bearing puller

67531-3010000

(Equivalent commercially available)



Press a new needle bearing onto the crankshaft using a hydraulic press and special tool until its edge is flush with the groove in the crankshaft.

Make sure that the height from the crankshaft end is 27.6 - 27.8 mm (2.9 - 3.0 in).

TOOL:

Driver shaft B

67534-1050000



INSTALLATION

Apply molybdenum oil solution to the main journal bearing sliding surfaces on the upper crankcase and the main journal sliding surfaces on the connecting rods.

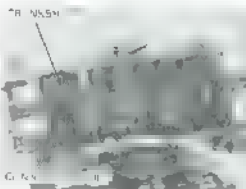


Apply molybdenum oil solution to the thrust surfaces on the crankshaft as shown.



CRANKSHAFT/TRANSMISSION

Lower the crankshaft into the upper crankcase. Avoid damaging the crankshaft by the timing belt. Carefully install the crankshaft into the upper crankcase. Set the belt and up the oil pump and the timing belt.



INSPECTION

Inspect both ends of the crankshaft. Set a dial gauge on the center main journal of the crankshaft. Rotate the crankshaft two revolutions and read the dial.

SERVICE LIMIT 0.30 mm (0.012 in)



MAIN JOURNAL BEARING

NOTICE

Do not interchange the bearing inserts. They must be installed in their original locations or the correct bearing oil clearance may not be obtained, resulting engine damage.

Remove the main bearing inserts. (page 12-5)

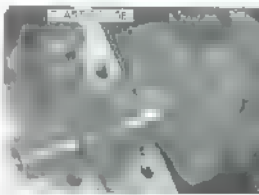
BEARING INSPECTION

Inspect the main journal bearing inserts on the upper and lower crankcase for unusual wear or pitting. Check the inserts for damage.



OIL CLEARANCE INSPECTION

Clean off any oil from the bearing inserts and main journals. Coat the crankshaft with the upper crankcase. Put a strip of plastigauge lengthwise on each main journal avoiding the oil holes.



Install the dowel pins and circlips.
Carefully install the lower crankcase on the upper crankcase.
Apply engine oil to the main journal & main bolt.
Place a new seal gasket and circlip.
Tighten the 8 mm bolts in a crosswise pattern in 3 of 4 steps.

TORQUE 27 N·m (2.8 kg-m, 20 lbf-ft)



Remove the main bearing cap screw circlip.
Measure the compressed plastic gauge at the widest point on each main journal to determine the oil clearance.

SERVICE LIMITS 0.04 mm (0.002 in)

If main bearing clearance exceeds the service limit, case, the correct replacement bearing.



BEARING SELECTION

Record the crankcase bearing support ID code letters from the pad on the left side of the upper crankcase as shown.



Record the corresponding main pump ID code on the bearing replacement image.

Cross-reference the main journal and bearing support codes to determine the replacement bearing color code.



MAIN JOURNAL BEARING SELECTION TABLE

		BEARING SUPPORT ID. CODE						Unit (mm) (in)
		A		B		C		
		37.000	37.006	37.008	37.012	37.012	37.012	
		(1.4568)	(1.4568)	(1.4568)	(1.4572)	(1.4572)	(1.4574)	
CRANKSHAFT ID. CODE	1	34.000	34.006	E	D	C	B	
		(1.3387)	(1.3392)	Thin	Thin	Thin	Thin	
	2	33.994	34.000	D	C	B	A	
		(1.3325)	(1.3385)	Medium	Medium	Medium	Medium	
	3	33.988	33.994	C	B	A	A	
		(1.3381)	(1.3383)	(Green)	(Brown)	(Black)	(Black)	

BEARING THICKNESS

A (Pink)	Thin
B (Brown)	A
C (Green)	A
D (Yellow)	B
E (Pink)	Thin

NOTICE

After selecting the bearing, check the clearance with a feeler gauge. If the clearance is too small, use a different bearing.

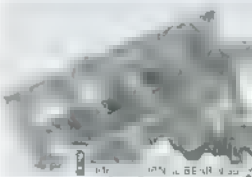


BEARING INSTALLATION

Clean the bearing outer surface and crankshaft

Use a clean cloth to wipe the bearing outer surface and crankshaft. Do not use oil or grease on the bearing outer surface or crankshaft.

Install the crankshaft



FRONT VIEW



Apply molybdenum oil solution to the crankpin bearing sliding surfaces on the bearing caps. Install the bearing caps by lugging the D ends on the connecting rod and bearing cap. Be sure each pin is installed in its original position, as noted during removal.



Apply oil to the bearing cap oil travels and coat the surfaces and install the cap nuts. Tighten the nuts in 3 or 4 steps and snug up 100%.

TORQUE 34 Nm (25 kgf-m, 25 lbf-ft)

Assemble the crankshaft halves (page 11-17)



TRANSMISSION

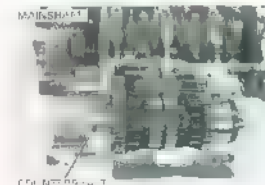
REMOVAL/DISASSEMBLY

Separate the crankshaft halves (page 11-17)

Remove the bolts and bearing oil plate.
Remove the mainshaft and countershaft assembly.



Remove the mainshaft and countershaft assembly.



CRANKSHAFT/TRANSMISSION

Remove the dowel pins and countershaft bearing cap.

Disassemble the mainshaft and countershaft.
Clean all disassembled parts in solvent thoroughly.

Inspect the mainshaft and countershaft for wear or damage to the keyways for a normal key, or damage.



Check the gear shifter groove for substantial wear or damage.



Check the gear dogs, dog holes and gear teeth for wear or lack of lubrication.

Measure the I.D. of each gear.

SERVICE LIMITS

M5, M6 28.04 mm (1.104 in)

C1 29.04 mm (1.145 in)

C2, C3, C4 31.04 mm (1.222 in)



Measure the O.D. of each gear bushing.

SERVICE LIMITS

M5, M6 27.84 mm (1.100 in)

C2 30.93 mm (1.218 in)

C3, C4 30.93 mm (1.218 in)

Calculate the gear-to-bushing clearance.

SERVICE LIMITS

M5, M6 0.10 mm (0.004 in)

C2 0.11 mm (0.004 in)

C3, C4 0.11 mm (0.004 in)



Check the mainshaft and countershaft for abnormal wear or damage.

Measure the mainshaft O.D. at the M5 gear.

SERVICE LIMIT 24.96 mm (0.983 in.)

Measure the countershaft O.D. at the C2 gear.

SERVICE LIMIT 27.96 mm (1.101 in.)

Calculate the gear bushing-to-shaft clearance.

SERVICE LIMITS

M5: 0.08 mm (0.003 in.)

C2: 0.08 mm (0.003 in.)

Turn the outer race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing inner race fits tightly on the shaft.

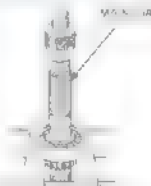
Remove and discard the mainshaft bearing if the race does not turn smoothly, quietly or fits loosely on the mainshaft.

Replace the countershaft roller and bearing as necessary if the race does not turn smoothly, quietly or fits loosely on the countershaft.



MAINSHAFT BEARING REPLACEMENT

Press out the mainshaft from the bearing using a hydraulic press.



Install a new mainshaft bearing onto the mainshaft by pressing the mainshaft bearing inner race using the special tools.

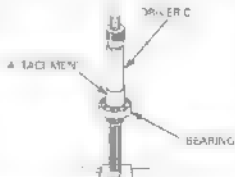
TOOLS:

Roller driver C

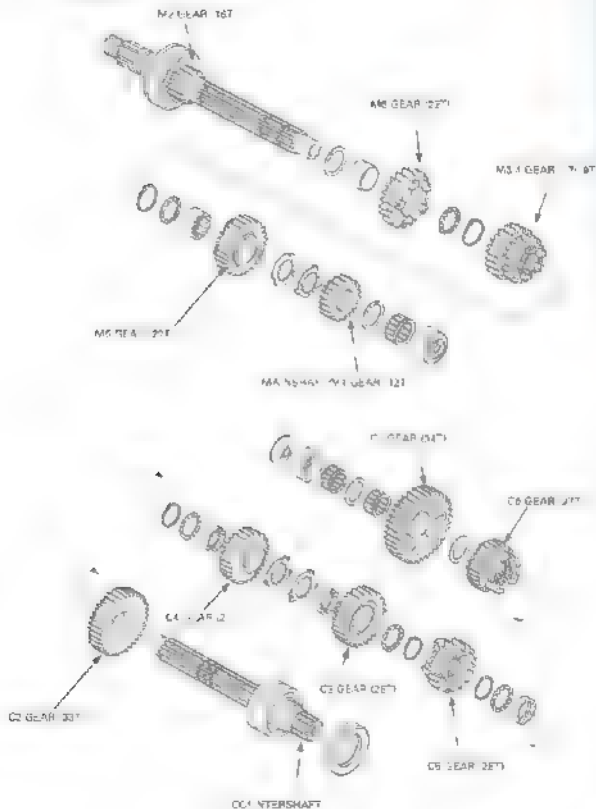
87746-0035100

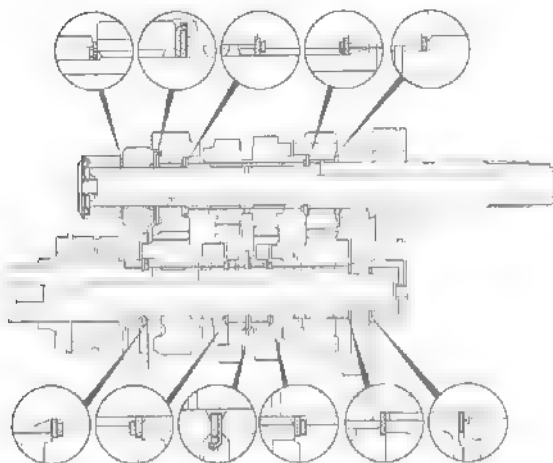
Attachment 25 mm I.D.

87746-0035200



ASSEMBLY





Align the lock washer tabs with the upflow washer grooves.

- Always install the thrust washer and snap ring with the chamfered rolled edge facing away from the thrust gear.
Install the snap ring so that its end gap aligns with the groove in the splines.
Make sure that the snap ring is fully seated in the split groove after installing it.

Assemble the transmission gear and shafts.
Coat each gear with clean engine oil and check for proper fit.

Align the oil holes in the MG bushing and mainshaft, and the CG bushing and countershaft.



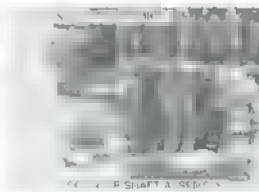
INSTALLATION

Apply molybdenum oil solution to the shaft and grooves in the MG, CG and CB gear.

Align the mainshaft and countershaft by aligning the countershaft bearing groove with the oil hole in the transmission and aligning the bearing holes with the dowel pins.



Also align the countershaft bearing stopper pin with the groove in the transmission.



Apply a locking agent to the mainshaft bearing and pin. Coat the mainshaft bearing and pin with the locking agent. Coat the mainshaft bearing and pin with the locking agent.

TORQUE: 12 Nm (1.2 kg-m, 9 lb-ft)

Assemble the crankcase (page 11-2).





13 FRONT WHEEL/SUSPENSION/STEERING

SERVICE INFORMATION	3	FRONT WHEELS	3-10
TROUBLESHOOTING	3-4	FORN	3-15
HANDLEBARS	3-7	STEERING STEM	3-25

SERVICE INFORMATION

GENERAL

SPECIFICATIONS

WHEEL	WHEELS	STEERING STEM
-------	--------	---------------

FRONT WHEEL/SUSPENSION/STEERING

TORQUE VALUES

Front drive axle nut

Front drive bolt

Front drive nut (for the axle)

Front drive nut (for the axle) (for the axle)

Front drive nut (for the axle) (for the axle)

Front drive nut

Front drive

Front drive (for the axle)

Front drive (for the axle) (for the axle)

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Front drive

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Front drive (for the axle) (for the axle)

TOOLS

Ball race remover shaft

Ball race remover head, 20 mm

Driver

Ball race, 22 x 47 mm

Pilot, 20 mm

Ball race driver weight

Ball race driver attachment

Steering arm socket

Ball race remover set

Remover attachment

Driver shaft

Steering arm driver

Ball race remover

Ball race remover

Ball race, 22 x 47 mm

Ball race, 22 x 47 mm

Ball race, 22 x 47 mm

Ball race, 22 x 47 mm

Ball race, 22 x 47 mm

Ball race, 22 x 47 mm

Ball race, 22 x 47 mm

Ball race, 22 x 47 mm

Ball race, 22 x 47 mm

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Ball race, 22 x 47 mm

Ball race, 22 x 47 mm

Ball race, 22 x 47 mm

Ball race, 22 x 47 mm

Ball race, 22 x 47 mm

TROUBLESHOOTING

Hard steering

- Steering head bearing adjustment nut too tight
- Worn or damaged steering head bearings
- Ball steering arm
- Insufficient tire pressure

Steers to one side or does not travel straight

- Damaged or loose steering head bearings
- Steering arm
- Ball race
- Wheel installed incorrectly
- Ball frame
- Worn or damaged wheel bearings
- Worn or damaged swingarm pivot bearings

Front wheel wobbling

- Worn or damaged front wheel bearings
- Worn or damaged front wheel bearings
- Worn or damaged front wheel bearings

Front wheel turns hard

- Worn or damaged front wheel bearings

Ball race, 22 x 47 mm

Ball race, 22 x 47 mm

Ball race, 22 x 47 mm

Ball race, 22 x 47 mm

Ball race, 22 x 47 mm

Ball race, 22 x 47 mm

Ball race, 22 x 47 mm

Ball race, 22 x 47 mm

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Ball race, 22 x 47 mm

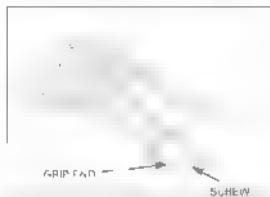
Ball race, 22 x 47 mm

Ball race, 22 x 47 mm

HANDLEBARS

HANDLEBAR REMOVAL

Remove the screw from the right grip end.



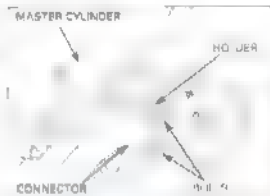
Keep the brake master cylinder

Remove the right rearview mirror.

Disconnect the front brake light switch wire across the front day switch.

Disconnect the front brake switch with connectors.

Remove the master cylinder holder bolts. Holder and master cylinder assembly.



Remove the right handlebar switch/throttle housing at once.



Loosen the throttle cable lock nuts and adjust the



FRONT WHEEL/SUSPENSION/STEERING

Disconnect the throttle cable ends from the throttle pipe and remove the housing.

SWITCH/THROTTLE HOUSING



Remove the throttle pipe.

THROTTLE PIPE



Remove the right rearview mirror.
Disconnect the clutch switch wire connectors from the switch.
Remove the clutch lever bracket, foot pedal, return spring and clutch lever bracket assembly.

M
WIRING CONNECTOR



Remove the screws and left handlebar switch housing.

WIRING



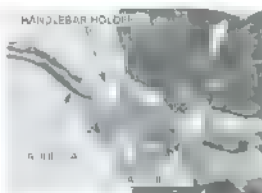
Remove the left handlever switch housing



Remove the screw from the left grip end



Remove the caps bolts and handlebar upper holders from the handlebar



INSTALLATION

Install the handlebars and upper holders with their punch marks facing forward

Temporarily tighten the upper holder socket bolts

Loosen the upper holder socket bolts and align the punch marks on the handlebars with the slots of the handlebar holders

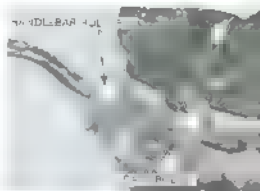
Tighten the forward bolts first then tighten the rear bolts

TORQUE 20 N-m (2.7 kgf-m, 20 lbf-ft)



FRONT WHEEL/SUSPENSION/STEERING

Install the caps to the handlebar upper holder bolts.



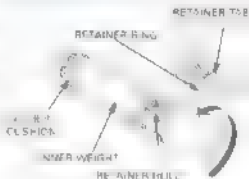
INNER WEIGHT REPLACEMENT

Remove the grip from the handlebar.

Slightly turn the weight clockwise with a screwdriver or pin.



To remove the weight, turn the weight clockwise with the inner weight by turning the cap.



Remove the grip and from the inner weight.

Use a pin to remove the cap.

Install the new retaining cap on the inner weight.

Insert the grip and onto the inner weight, aligning as shown with the slot in the inner weight.

Install a new grip and mounting screw.

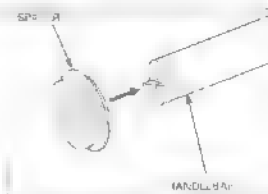


Insert the inner weight assembly into the handlebar.

Turn the inner weight and hook the retaining tab with the hole in the handlebar.

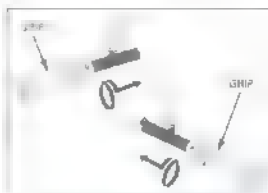


Install the left handlebar switch spacer onto the left handlebar.



Apply Honda Bond A or equivalent adhesive to the inside of the grip and the undersides of the left handlebar and throttle grip.

Wait 3-5 minutes and install the grip.
Rotate the grip for even application of the adhesive.



Install the grip onto the handlebar and rotate the grip for even application of the adhesive.

TORQUE 10 N·m (10 kgf-cm, 7.0 ft-lb)



Install the left handlebar switch housing, aligning its locating pin with the hole in the handlebar.



FRONT WHEEL/SUSPENSION/STEERING

Tighten the forward screw first then the rear screw



SCREW

Install the clutch lever bracket assembly by aligning the end of the bracket with the punch mark on the handlebar.

Install the clutch lever bracket holder with the "U" mark facing up.

Tighten the upper bolt first then the lower bolt.

TORQUE: 12 Nm (1.2 kgf-m, 9 lbf-ft)



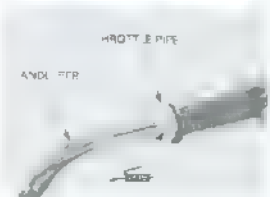
CLUTCH BRACKET

Connect the clutch switch wire to the handlebar, and install the handlebar mirror.



CLUTCH
SWITCH CONNECTOR

Apply pressure to the throttle grip inner surface and install the throttle grip to the handlebar.

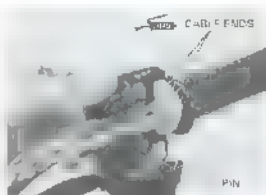


THROTTLE PIPE

HANDLEBAR

Install the right hand lever switch/throttle housing by snapping it into place with the hole in the knuckle.

Apply grease to the throttle cable ends.
Connect the throttle cables to the throttle grip.



Tighten the forward screw first, then the rear screw.
Install the grip on the handle.

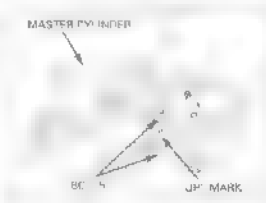


Adjust the throttle free play by turning the adjuster screw on the handle.
Check the throttle operation (page 7-4).



Install the master cylinder by aligning the pin of the master cylinder with the punch mark on the fork slider.
Install the master cylinder slider with the "UP" mark facing up.
Tighten the upper bolt first, then tighten the lower bolt.

TORQUE 12 N·m (1.2 kgf-m, 8 lbf-ft)



FRONT WHEEL/SUSPENSION/STEERING

Disconnect the brake switch wire connectors.
Install the mirror as follows:



FRONT WHEEL

REMOVAL

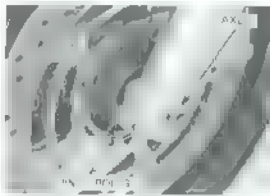
Support the motorcycle securely using a safety stand on its stand.

Remove the mounting bolts and both brake calipers.

Secure the brake caliper with a piece of wire so that it does not hang from the brake hose. Do not overuse brake cable.

Loosen the right side pinch bolts.
Remove the axle nut.

Loosen the left side pinch bolts.
Remove the axle and the front wheel.



INSPECTION

Axle

Set the axle in a V block and measure the runout.
Actual runout is 1/2 the total indicator reading.

SERVICE LIMIT: 0.2 mm (0.008 in)



Wheel bearing

Turn the inner race of each bearing with your finger.
The bearings should turn smoothly and quickly.
Also check the tire bearing cap for any damage to the hub.

Remove and discard the bearings if they do not turn smoothly or if they fit loosely in the hub.

Install the new bearings into the hub using the special tools page 3-12.



Wheel rim runout

Check the rim runout by placing the wheel in a turntable.
Spin the wheel by hand and read the runout using a dial indicator.
Actual runout is 1/2 the total indicator reading.

SERVICE LIMITS:

Radial: 2.0 mm (0.08 in)

axial: 3.0 mm (0.12 in)

DISASSEMBLY

Remove the bolts and brake discs.

Remove the calipers and dust caps.



FRONT WHEEL/SUSPENSION/STEERING

Insert the bearing remover head into the bearing. From the opposite side insert the bearing remover shaft and drive the bearing out of the wheel hub. Remove the distance collar and drive out the other bearing.

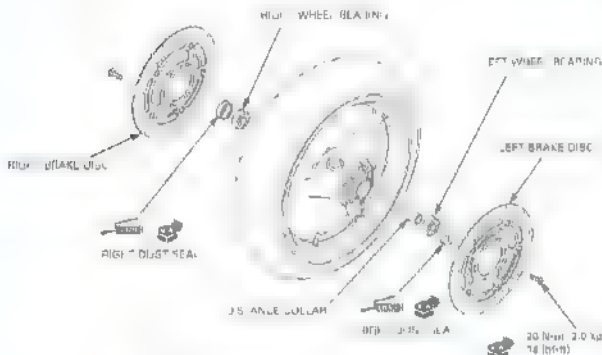
TOOLS

Bearing remover head, 20 mm 07746-0080840

Bealco Removals 07606-001010



ASSEMBLY



Drive in a slow right bearing,
until the distance right from town in the left bearing
is 1000 yds.

TOOLS

Attachment, 42 X 47 inch
Pilot, 20 inch

07746-0010000

57746-5010300

57745-00-0000 00



Install a brake assembly on each wheel in the normal rotating direction. Install and tighten the new mounting bolts to the specified torque.

TORQUE 20 N·m (2.0 kg-m, 14 lbf-ft)

Apply grease to the ball socket pins, the tie rod ends and the wheel hub.



WHEEL BALANCE

- The wheel balance must be checked with the tire is inflated.
- If the tire balance is not good, a new tire must be mounted on the side wall must be located next to the valve stem. Remount the tire if necessary.

Note the rotating direction marks on the wheel end cap.



Mount the wheel, tire and brake disc assembly on an inspection stand.

Spin the wheel around it to stop and mark the low (lightest) part of the wheel with chalk.

Do this two or three times to verify the heavy points. If the wheel is balanced it will not stop consistently in the same position.

To balance the wheel, install balance weights on the lightest side of the rim, the side opposite the chalk marks. Add just enough weight so the wheel will no longer stop in the same position when it is spun.

Do not add more than 80 g (2.8 oz) to the front wheel.

INSTALLATION

Install the side rollers.



Install the front axle nut and tighten it to the specified torque.

Apply a thin layer of grease to the front axle surface on all the front axle from the ball joint.



Install the axle and tighten the axle nut to the specified torque.

TORQUE: 60 N·m (5.0 kgf-m, 43.5 ft-lb)

Tighten the right side pinch bolt to the specified torque.

TORQUE: 22 N·m (2.2 kgf-m, 16.5 ft-lb)



Install both brake discs and tighten the new mounting bolts to the specified torque.

TORQUE: 30 N·m (3.1 kgf-m, 22.0 ft-lb)

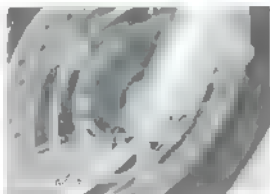


With the front brake applied, pump the brake until down stroke is firm. Repeat down stroke to the bottom operation by applying the brake lever.



Tighten the left axle pinch bolts to the specified torque.

TORQUE 22 N·m (2.2 kgf-m) 16 ft·lb



Check the clearance between the brake disc and caliper bracket on both side after installation.
The clearance should be at least 0.1 mm (0.004 in).



FORK

REMOVAL

- Remove the front
 - Oil seal (page 13)
 - Front fender (page 13)



Loosen the top bridge pinch bolts.



When the fork leg will be disassembled, grasp the fork bolt, but do not remove it yet.



Loosen the fork bottom pinch bolts and remove the fork tube from the fork cap bridge and positioning arm.



To create oil to position the fork
tube, use a...

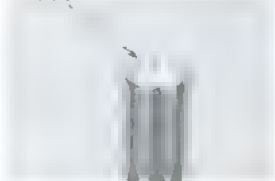
DISASSEMBLY

Remove the fork protected by prying it carefully using
a SCREWDRIVER.



Remove the lock bolt from the fork tube.

FIG. 3-17



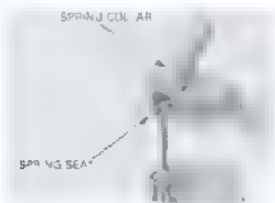
Hold the damper rod lock nut with a 4 mm spanner, then loosen and remove the lock bolt from the damper rod.

Remove the spring.

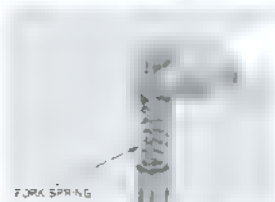


Remove the followings:

- ▲ Spring collar
- Spring seat



Fork spring



FRONT WHEEL/SUSPENSION/STEERING

Pour out the fork fluid by pumping the fork tube several times.



- Hold the caliper bracket in a vice with soft jaws or a shop cloth.
Remove the fork damper socket bolt and sealing washer.



Remove the dust seal.

JUST SEAL



Remove the seal and piston rod.



STOPPED RING

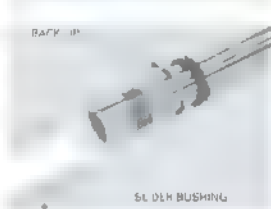
Remove the fork damper assembly and oil lock valve from the fork tube.



DAMPER ASS'Y

OIL LOCK VALVE

Pull the fork tube out until you feel resistance from the slider bushing tightly with the fork tube edge close from the fork slide.
The slider bushing will be forced out by the fork tube bushing.



SLIDER BUSHING

Remove the oil seal, back-up ring and guide bushing from the fork tube.

INSPECTION

Fork spring

Measure the fork spring free length.

SERVICE LIMIT: 276.1 mm (10.87 in.)



Fork tube slider/damper

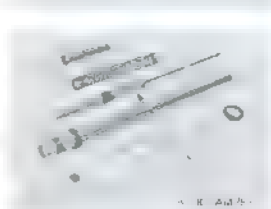
Check the fork tube and fork slider for score marks, scratches, or excessive or abnormal wear.

Replace any components that are worn or damaged.

Check the fork damper for damage.

Check the oil lock valve for wear or damage.

Replace the fork damper assembly if any components are damaged.



FORK SLIDER

FRONT WHEEL/SUSPENSION, STEERING

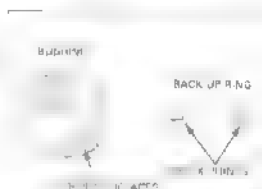
Place the fork tube in a y-block and measure the amount. Actual sagging is 1/2 the total deflection reading.

SERVICE UNIT: 0.20 units per 1000 sq ft

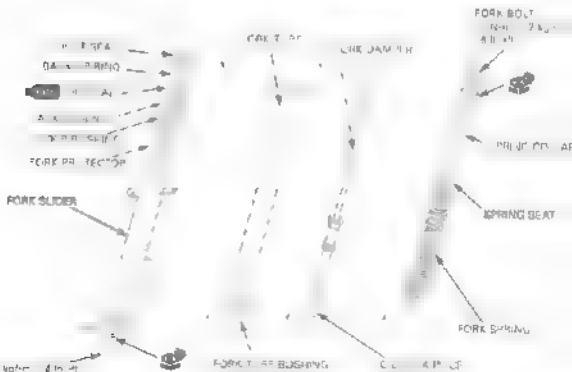
Ford, Susan. 1995. <http://www.ford.com>

visually inspect the slides and form for over-rips. Replace the bagging if there is excessive scratching or scuffing, or if the bottom is worn so that the copper face appears on more than 2.5% of the entire surface.

Check the back up ring; replace it if there is any damage to the ring or the spring.



ASSEMBLY



24 Nov 2016 10:46 UTC

Before assembly, wash all parts with a high flash or non-flammable solvent and wipe them dry.

Install a new fork tube bushing if the tube bushing has been removed.

NOTICE

Be careful not to damage the fork tube bushing coating.

- Do not open the fork tube bushing more than necessary.
- Remove the burrs from the bushing mating surface being careful not to peel off the coating.

Install the inner slide or shim with care. Do not damage the coating of the bushing if it has been removed.

Remove the burrs from the bushing mating surface being careful not to peel off the coating.

Install the slider bushing, back-up ring and new oil seal into the fork slider.

Install the fork slider into the fork tube.

Drive the oil seal in using the special tools.

TOOL

Fork seal driver weight 07947-KA60100

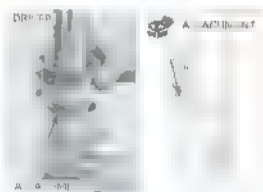
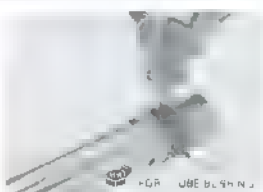
Fork seal driver attachment 07947-KA40200

Apply a locking agent to the fork socket bolt threads and the oil seal with a new sealing washer.

Hold the axle in the upright position with both hands to swing down.

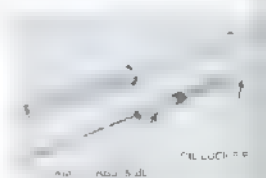
Tighten the fork socket bolt to the specified torque.

TORQUE 20 N·m (2.0 kgf·m, 14 (lb·ft))



FRONT WHEEL/SUSPENSION/STEERING

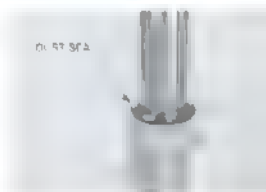
Install the fork damper assembly and o-ring pack and the fork tube.



Install the stopper ring into the fork slider groove securely.



Install the dust seal.



Pull the fork damper assembly into the fork tube.



RECOMMENDED FORK FLUID
Pro Honda Suspension Fluid 55-8

FORK FLUID CAPACITY
403 ± 2.5 cm³ (15.7 ± 0.08 US oz., 15.7 ± 0.89 fl. oz.)

Fill up in smaller to several days.

Measure the oil level from the top of the fork tube while oil is rising and falling 5 times. Move the fork tube slowly more than 10 times and the damper rod more than 10 times.

FORK OIL LEVEL 186 mm (5 1/4 in.)

Pull the damper rod up and install the fork spring with the flanged end facing down.

Secure the spring with the lock nut.

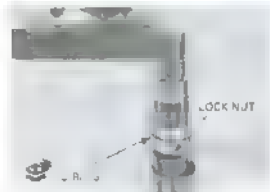
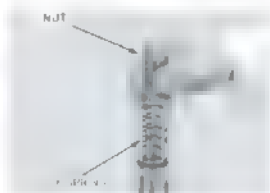
Install the spring seat and apply oil.

Install a new O-ring onto the fork bolt.
Apply fork fluid to the new O-ring.

Hold the damper rod and screw the fork bolt onto the damper rod until it seats on the damper rod lock nut.

Hold the fork bolt and tighten the oil seal to the specified torque.

TORQUE 22 N·m (2.2 kg-m, 16 lbf-ft)



Screw the fork bolt in to the fork tube.

FORK BOLT



Install the fork protector into the fork slider, aligning the protector base with the groove in the fork slider.

PROTECTOR



INSTALLATION

Attach the fork bridge to the bottom bridge.
Align the upper end of the fork tube with the upper ball head of the top bridge.



Tighten the bottom bridge pinch bolt to the specified torque.

TORQUE 99 N·m (4.0 kg·m, 28 lbf·ft)



Tighten the fork bolts in the specified sequence to the specified torque.

TORQUE 22 N·m (2.2 kgf-m, 16 lbf-ft)

- 1. Upper fork nut
- 2. Lower fork nut
- 3. Wheel nut



STEERING STEM

REMOVAL

- 1. Remove the steering damper.
- 2. Remove the steering damper nut.
- 3. Remove the steering damper.
- 4. Fork page 13-15

Remove the socket ball mount and head, tilt the fork outwards.



Remove the ball joint from the fork.



Remove the ball joint from the fork.

Remove the ball joint from the fork.



FRONT WHEEL/SUSPENSION/STEERING

Remove the turn signal (light bracket) from the steering arm.

BRACKET



Straighten the tabs of the lock washer.

Remove the lock washer and lock nut.

LOCK NUT



Remove the steering stem nut and lock washer from the steering stem.

TOOL

Steering stem socket

D7816-3/10101

STEERING STEM SOCKET



Remove the following.

Just see

- Upper bearing inner race
- Upper bearing

INNER RACE

OUTER RACE

UPPER BEARING



Note the position of the steering stem over the bearing.

Steering stem
over bearing

LOWER BEARING

DRIVER SHAFT

BEARING RACE REPLACEMENT

Replace the upper bearing outer races using the steps in this section.

TOOLS

- Ball race remover
- Ball race remover pin
- Remove attachment
- Driver shaft

- 07853-4250002 or
- 07853-4250002 or
- 07848-4250002 or
- 07848-4250002



Replace the lower bearing outer races using the steps in this section.

TOOLS

- Ball race remover
- Ball race remover

- 07853-3705002
- 07853-4250002



Temporarily install the steering stem nut onto the stem to prevent the threads from being damaged when removing the lower bearing inner race from the stem.

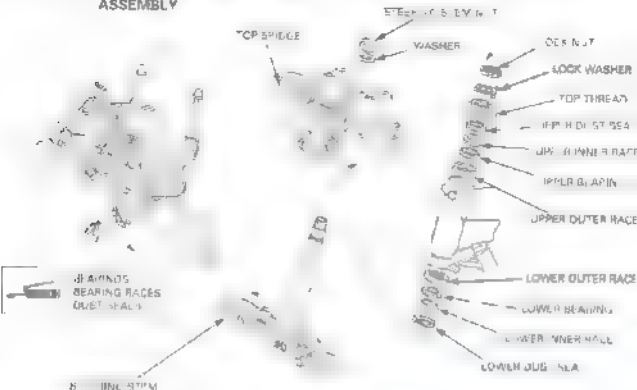
Remove the lower bearing inner race with a chisel or pry bar, being careful not to damage the stem. Remove the nut.

LOWER
INNER RACE



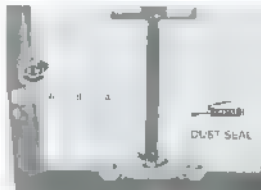
FRONT WHEEL/SUSPENSION/STEERING

ASSEMBLY



Apply grease to the new dust seal lips and press it over the steering stem. Install a new lower bearing race onto the steering stem and a hydraulic cross.

TOOL
Steering stem driver 07949-M000000



Remove the inner bearing outer race using the special tool.

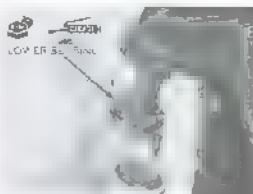
TOOLS
Driver handle 07749-000000
Attachment 42x47 07749-0010300

Remove the inner bearing outer race using the special tool.

TOOLS
Driver handle 07749-000000
Attachment 42x47 07749-0010300



Apply grease to the lower bearing and bearing race insert the steering arm into the steering head pipe.



Apply grease to the upper bearing bearing race and dust seal lip.

Install the upper bearing, upper inner race and dust seal.



Apply oil to the steering adjustment nut threads. Tighten the steering adjusting nut to the initial torque.

TOOLS
Steering stem socket 07810-2710101

TORQUE 25 N-m (2.5 kgf-m, 18 lbf-ft)



Move the steering arm right and left, look at the lower inner race and the bearing. Make sure that the steering stem moves smoothly without play and the lower inner race is free.



FRONT WHEEL/SUSPENSION/STEERING

Retighten the bearing adjusting nut to the specification below.

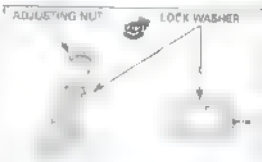
TORQUE: 25 N·m (2.5 kgf-m, 18 lbf-ft)

Check that the steering arm moved smoothly with a play of 10 mm.



Install the new lock washer onto the steering arm.

Align the tabs of the lock washer with the grooves in the adjustment nut and bend the opposite side downward to fit the adjustment nut groove.



Push and finger tighten the lock nut.

Turn the lock nut only further against the wash nut with 1/4 turn (90°) enough to align to grooves with the wash nut.

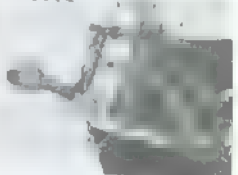
Mark the lock washer with a mark to the lock nut groove.

ADJUSTING NUT

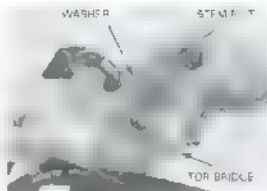


Install the turn signal light bracket.

BRACKET



Install the top bridge stem nut and washer.



Temporarily install the front fork.

Tighten the steering stem nut to the specified torque.

TORQUE: 102 N·m (70.5 kgf-m, 75 lbf-ft)



Insert the front brake hose clamp, tighten the bolt to the specified torque.

TORQUE: 1.7 N·m (1.7 kgf-cm, 15 lbf-in)



Install the headlight case, motor, relay and light bulb. See sticker below.

Install the following:

Front fork (page 12-15)

Handlebar (page 13-5)

Consultation meter (page 10-5)



STEERING HEAD BEARING PRE-LOAD

Jack up the motor vehicle so that it is supported on the jacks.

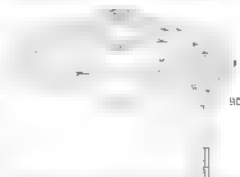
Loosen the steering arm adjusting nut.

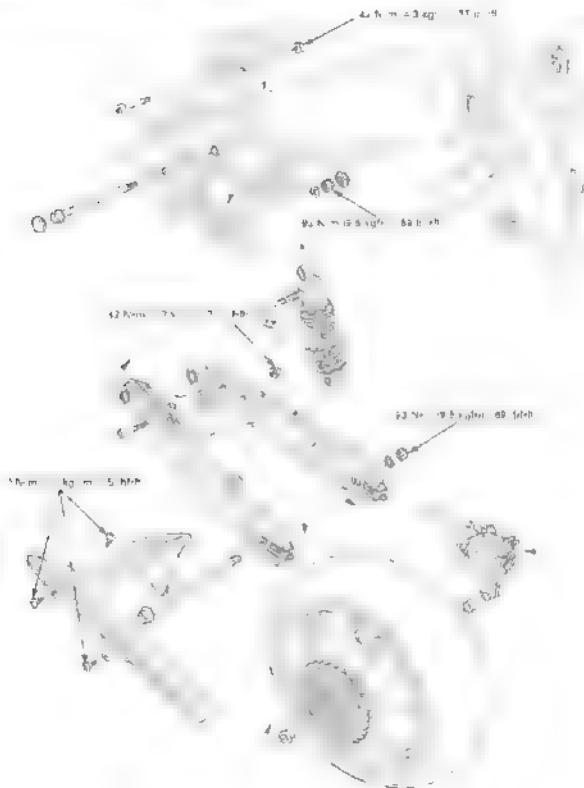
Turn the

steering head up or down.

The pre-load should be within 10 to 15 N-m (0.1 to 1.5 kgf-m).

If the bearings do not fall while the steering arm is moved the front wheel to the ground and adjust the steering bearing adjusting nut.





REAR WHEEL/SUSPENSION

TORQUE VALUES

Rear axle nuts, 200

Rear driver sprocket nut

Pinion nut, 25

Shock absorber mounting nut

Shock absorber mounting cap

Swingarm pivot nut

22 Nm 4.2 l. 4m, 5.4m, 6.4m

10 Nm 4.2 l. 4m, 5.4m, 6.4m

53 Nm 5.4 l. 4m, 5.4m, 6.4m

47 Nm 4.2 l. 4m, 5.4m, 6.4m

10 Nm 5.4 l. 4m, 5.4m, 6.4m

23 Nm 5.4 l. 4m, 5.4m, 6.4m

Shock absorber replaced with a new one

10

10

10

Shock absorber replaced with a new one

10

TOOLS

Balling removal shaft

Balling removal head 20 mm

Wrench

Attachment, 32 X 35 mm

Attachment, 42 X 47 mm

Attachment, 52 X 55 mm

Attachment, 57 X 60 mm

Attachment, 23 X 34 mm

Pinion 17 mm

Pinion 25 mm

Pinion 25 mm

Attachment, 28 X 39 mm

Balling removal handle

Balling removal head

Pinion 17 mm

Pinion 25 mm



TROUBLESHOOTING

Soft suspension

- Worn shock absorber spring
 - Worn or damaged shock absorber
 - Worn or damaged spring
- Insufficient tire pressure

Rear suspension noise

- Faulty rear shock absorber
 - Worn or damaged shock absorber
 - Worn or damaged spring

Hard suspension

- Incorrect suspension adjustment
- Overloaded rear suspension bearings
 - Worn or damaged bearing
- Incorrect swingarm pivot fasteners tightening
 - Torque too high

Rear wheel wobbling

- Bent wheel
 - Worn or damaged rear wheel bearing
- Faulty axle
 - Unbalanced rear tire and wheel
 - Insufficient air tire pressure
- Faulty swingarm pivot bearings

Rear wheel turns hard

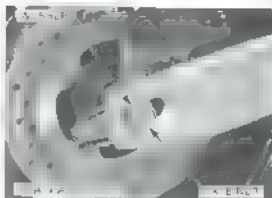
- Worn or damaged rear wheel
 - Worn or damaged tire
 - Worn or damaged wheel
- Drive chain too tight

REAR WHEEL

REMOVAL

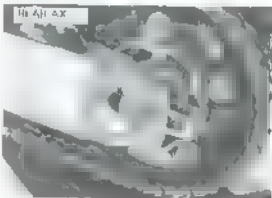
Support the motorcycle using a safety stand or a hoist, raise the rear wheel off the ground.

Remove the axle nut and washer.

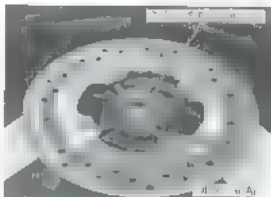


Remove the rear hub.

Detach the drive chain from the driven sprocket, then remove the rear wheel.



Remove the right side roller and dust seal from the wheel right side.



Remove the left side roller and dust seal from the wheel left side.



INSPECTION

Axis

Slide the axle in blocks at minimum clearance.
Adjustment of 2 mm to 10 mm (add 1)

SERVICE LIMIT 0.2 mm (0.01 in)



Slide the
hub bearing in

Wheel bearing

Turn the inner race of each bearing with your finger.
Bearings should turn smoothly and quietly.
Also check that the bearing outer race fits tightly in the hub.

Remove and discard the bearings if they rattle or
if they do not turn smoothly or quietly
in the hub.



Wheel rim runout

Check the rim runout by placing the wheel in a
turning stand.
Spin the wheel slowly and read the runout using a
rim indicator.
Actual runout is 1/2 the total indicator reading.

SERVICE LIMITS Radial: 2.0 mm (0.08 in)
Axial: 2.0 mm (0.08 in)



Inspect the
replacement
parts for the drive
shaft.

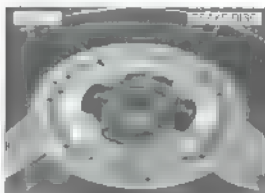
Drive sprocket

Check the drive sprocket for wear and tear.
Replace the sprocket if worn or damaged.



DISASSEMBLY

Remove the bolts and brake disc



Remove the driven flange assembly from the rear wheel hub



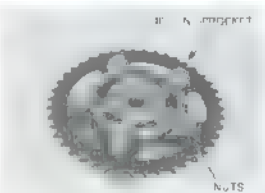
Remove the wheel flange rollers
Remove the O-ring



Driven flange bearing removed
Loosen the driver side roller nuts

Remove the driven flange from the wheel hub, then
remove the driven sprocket nuts and sprocket

Remove the driven flange bearing and roller



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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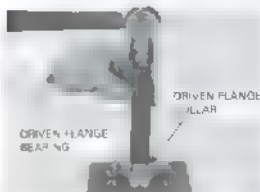
Install the drive roller.

Drive in the left side bearing using the same tools.

Drive the driven flange bearing out using the special tools.

TOOLS

Driver	87745-0010000
Attachment, 28 X 38 mm	87746-1510100
Pilot, 20 mm	87746-0040500



Driven flange bearing installation

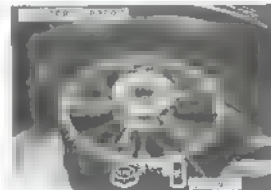
Drive the new driven flange bearing into the driven flange using the special tools.

TOOLS

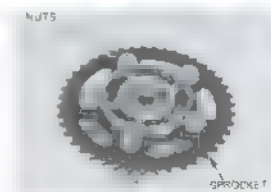
Driver	87745-0010000
Attachment, 52 X 66 mm	87746-0010100
Pilot, 20 mm	87746-0040500



Install the wheel drive hub on the drive shaft. Apply oil to the drive flange and install it into the groove of the wheel hub.



If the driven sprocket was removed, install the driven sprocket and temporarily tighten the nuts.



REAR WHEEL/SUSPENSION

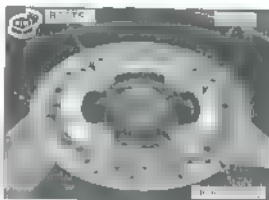
Install the driven flange assembly into the left wheel hub.

TORQUE: 108 N·m (7.9kg-m, 80 lbf-ft)



Insert the brake disc with its rotating direction mark facing out. Install and tighten the new bolts to the specified torque.

TORQUE: 42 N·m (4.2 kg-m, 31 lbf-ft)



WHEEL BALANCE

The wheel balance must be checked when the tire is retightened.

When retightening the tire, the balance mark is pointing out. A side wall mark is created next to the valve stem. Adjust the tire pressure.



Note the rotating direction marks on the wheel or tire.



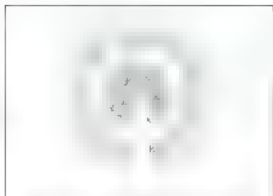
Mount the wheel, tire and axle disc assembly on an inspection stand.

Spin the wheel, allow it to stop, and mark the low spot (heaviest part of the wheel) with chalk.

Do this two or three times to verify the heaviest area. If the wheel is balanced, it will not stop consistently in the same position.

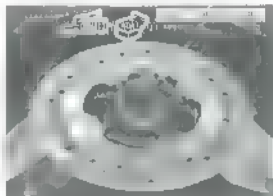
To balance the wheel, install weights with the heaviest side of the tire facing outside the wheel marks. Add a small weight so the wheel will no longer stop in the same position when it is spun.

Do not add more than 80 g (2.8 oz) to the rear wheel.



INSTALLATION

Apply grease and install the dust seal to the right side.

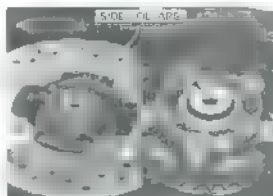


Apply grease and install the dust seal to the left side.



Apply grease to the side collars, inside and grooves.

Install the side collars.



REAR WHEEL/SUSPENSION

Insert the rear wheel (steps bracketed on the right) side of the swingarm.



11. **11** Place the rear wheel in the swingarm. Insert the drive shaft into the drive shaft. Insert the rear axle into the swingarm.

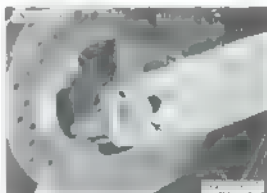


Install the washers and axle nut.

Adjust the drive chain slack (page 5-10).

Tighten the axle nut to the specified torque.

TORQUE 93 N·m (9.5 kgf·m) 60 lbf·ft



SHOCK ABSORBER

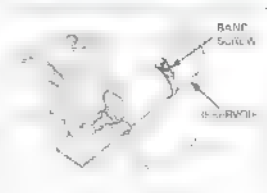
REMOVAL

Remove the seat (page 2-2).

Remove the side cover (page 2-7).

Secure the motorcycle using a front end stand (page 2-10).

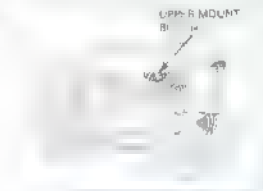
Loosen the shock absorber reservoir (labeled as the front) and remove the reservoir from the inner fender.



Remove the shock absorber mounting bracket.



Remove the shock absorber upper mounting bracket and the shock absorber.



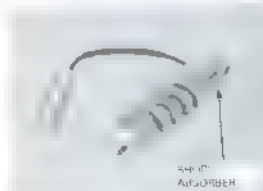
INSPECTION

Check the damper unit, reservoir hose and reservoir for leakage or other damage.

Check the upper joint bushing for wear or damage.

Inspect all the other parts for wear or damage.

Replace the shock absorber assembly if necessary.



NEEDLE BEARING REPLACEMENT

Remove the needle roller and dust seals.



REAR WHEEL/SUSPENSION

Press out the needle bearing out of the shock absorber lower mount using the special tools.

TOOLS

Driver

04849-3710001 or

07946-MJ00100

Attachment, 22 K 24 mm

07768-0211000

Pilot, 17 mm

07146-0340400

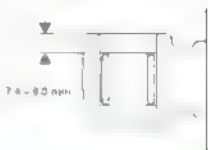
ATTACHMENT

DRIVER
AT 45° ANGLE
14-10LE

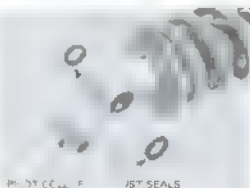
5-1

PILO

Press a new needle bearing into the lower mount so that the needle bearing surface is lower 3 to 5 mm (0.24 to 0.39 in) from the end of the shock mount using a 5-1 4 5.



Apply grease to the new dust seal lips. Install them into the lower mount. Install the pivot roller.



SHOCK ABSORBER DISPOSAL PROCEDURE

Remove the damper reservoir cap

Release the nitrogen from the reservoir by depressing the VALVE CORE

NOTICE

- Point the valve away from you to prevent damage getting in your eyes
- Before disposal of the shock absorber, release the nitrogen by pressing the valve core. Then remove the valve from the shock absorber reservoir.

INSTALLATION

Install the shock absorber into the frame with the reserve tank outlet facing to the left.
Insert the upper and lower mounting bolt/nut.
Tighten the upper mounting nut to the specified torque.

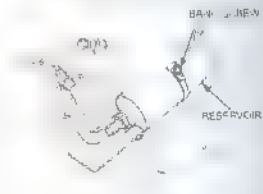
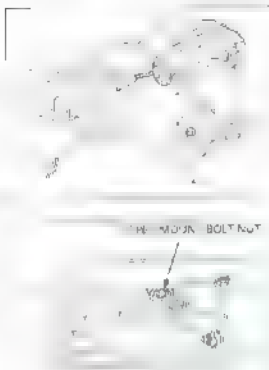
TORQUE 42 N·m (4.3 kgf-m, 31 lbf-ft)

Tighten the lower mounting nut to the specified torque.

TORQUE 42 N·m (4.3 kgf-m, 31 lbf-ft)

Insert the reservoir into the reserve tank.
Tighten the cap to the specified torque.

Install the removed parts in the reverse order of removal.



SWINGARM

REMOVAL

Remove the rear wheel (page 4).

Remove the socket bolts and drive them out.

Socket bolts



Remove the swingarm (page 10).

AVG. COVER



Remove the swingarm (page 10).

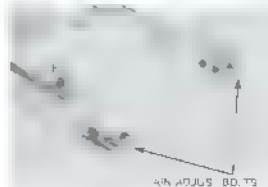
Remove the swingarm (page 10).

SWINGARM



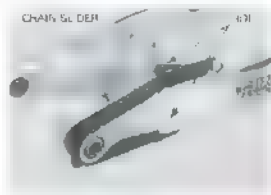
DISASSEMBLY/INSPECTION

Remove the bolts (3) (page 10) and (3) (page 10).



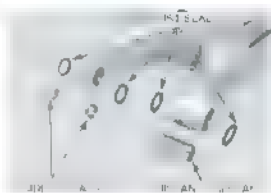
Remove the bolts and drive chain slider.

Check the drive chain slider for wear or damage.



Remove the pivot collar and dust seals from the swingarm left adjust.

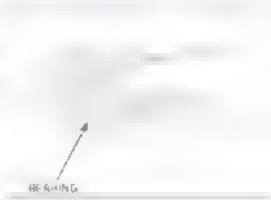
Check the dust seals and collars for damage or fatigue.



Turn the inner race of right pivot bearings with your finger.

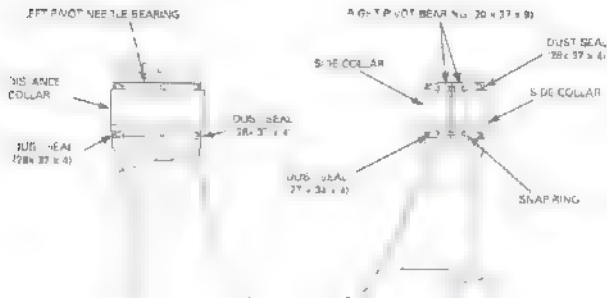
The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the hub.

Remove and discard the bearings if the races do not turn smoothly and quietly, or if they fit loosely in the pivot.

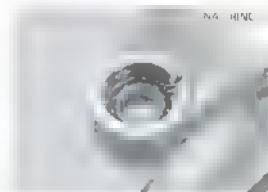


REAR WHEEL/SUSPENSION

PIVOT BEARING REPLACEMENT



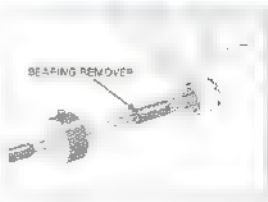
Remove the snap ring.



Remove the right pivot roller bearing using the special tools.

TOOLS

Bearing remover handle	07936-2710100
Bearing remover shaft set, 20mm	07936-2710600
Remover weight	07936-0010705



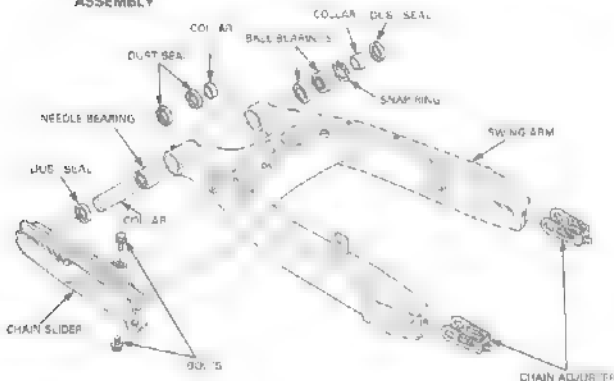
Press the left pivot needle bearing out using the special tools and a hydraulic press.

TOOLS

Driver 07945-3710001
Attachment, 32 X 35 mm 07746-0010001
Pilot, 28 mm 07746-0041100



ASSEMBLY



Press the needle bearing into the swing arm.

Press the needle bearing into the swing arm.

Press the needle bearing into the swing arm using the special tools and a hydraulic press.

TOOLS

Driver 07746-0010000
Attachment, 37 mm 07746-0010000
Pilot, 28 mm 07746-0041100



REAR WHEEL/SUSPENSION

Preparation of 3a: 0.367 g = using the stock tools
 ent) → hydro- K. (green)

† 0.05 vs. control.

Derby 1999

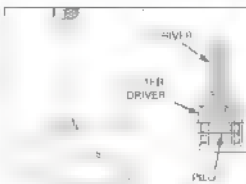
571 45-50, 1908

Attachment, 32 x 36 mm

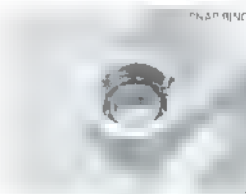
074 46-01 0100

Pilot, 210 cm

077-22-0340500



Install the snap ring into the groove securely.

[illegible]

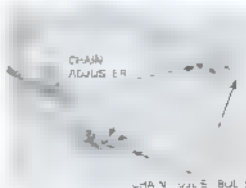
needle bearing.
Install the pivot on the collar

total the prior variance collected

Apply grease to the dust seal box, then install the dust seals and pivot roller into the left bearing plate.



insight the books and drug companies have



Install the drive chain slider, aligning the slot with the boss on the swing arm. Insert the drive chain slider bosses into the hole in the swing arm.

CHAIN SLIDER

ALIGN



Install and tighten the new drive chain slider mounting bolts to the specified torque.

TORQUE: 11 Nm (10.5 lbf-m, 8.5 lbf-ft)

BOLT



INSTALLATION

Apply the **grease** to the new drive chain roller and adjust surface.

Install the swing arm onto the frame.

Install the swing arm pivot bolt to the frame and swing arm pivot.

Install and tighten the swing arm pivot nut to the specified torque.

TORQUE: 32 Nm (29 lbf-m, 29 lbf-ft)



Install the pivot **nut** of the

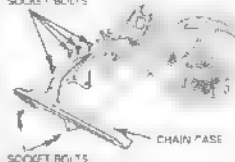


REAR WHEEL/SUSPENSION

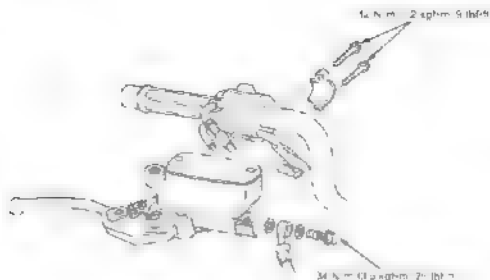
Install the cover box and drive chain case.

Install the rear wheel (page 14-9)

SOCKET BOLTS



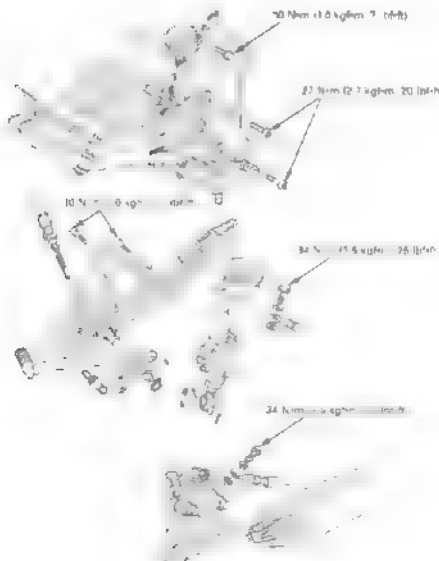
FRONT



15. HYDRAULIC BRAKE

SERVICE INFORMATION	15-2	FRONT MASTER CYLINDER	15-10
TROUBLESHOOTING	15-3	REAR MASTER CYLINDER	15-15
BRAKE FLUID REPLACEMENT/ AIR BLEEDING	15-4	FRONT BRAKE CALIPER	15-19
BRAKE PAD/DISC	15-7	REAR BRAKE CALIPER	15-23
		BRAKE PEDAL	15-25

REAR:



HYDRAULIC BRAKE

SERVICE INFORMATION

GENERAL

▲ CAUTION

- Avoid breathing dust particles.
Never inhale brake fluid. Wear safety glasses when applying brake oil or brake grease.
- A contaminated brake disc or pad can damage the brake disc or pad. Use a high quality brake discing agent.
Check the brake system by applying the brake when the motorcycle is stopped.
If the brake oil or grease is applied to the brake disc or pad surfaces, it is also harmful to some rubber parts. Be careful not to apply the brake oil or grease to the brake disc or pad surfaces.
Never apply a brake oil or grease to the brake disc or pad surfaces.
- On a motorcycle with a disc brake, if the brake fluid is low, the system must be bled.
However, if the brake fluid is low, the brake disc or pad surfaces may be damaged. Be careful of the type of fluid as they may not be compatible.
- Always check brake operation before riding the motorcycle.

SPECIFICATIONS

	ITEM	STANDARD	SERVICE LIMIT
Front	Brake disc (mm/in)	PC 4	
	Brake disc (mm/in)	4.3 4.9 10.17 0.18	3.5 (0.14)
	Brake oil (mm)		0.3 0.012
	Master cylinder (mm)	4.0 30 14.5 10.5 12 45.20	4.0 30 0.0523
	Master cylinder	4 1.8 14.5 10.5 12 45.20	17.5 17.5 14.5 14.5
	Caliper cylinder (mm)	A 4.4 30 14.5 10.5 12 45.20	17.5 17.5 14.5 14.5
	Caliper cylinder	B 27.000 27.080 1.0680 1.0680	27.08 1.0681
	Caliper cylinder	A 1.20 1.20 1.20 1.20 1.20 1.20	1.2 1.2 1.2
	Caliper cylinder	B 26.818 26.858 1.0680 1.0680	26.81 1.0681
	Caliper cylinder (mm)	PC 4	
Rear	Brake oil (mm)	4.0 30 14.5 10.5 12 45.20	4.0 0.5
	Brake disc (mm)		1.0 1.0 1.0
	Master cylinder (mm)	12.700 12.743 0.49999 0.50171	12.740 0.5022
	Master cylinder	12.7 12.7 12.7 12.7 12.7 12.7	12.7 12.7 12.7 12.7
	Caliper cylinder (mm)	1.2 1.2 1.2 1.2 1.2 1.2	1.2 1.2 1.2 1.2
	Caliper cylinder	32.8 32.8 32.8 32.8 32.8 32.8	33.00 33.00
	Caliper cylinder (mm)	32.8 32.8 32.8 32.8 32.8 32.8	33.00 33.00

TORQUE VALUES

Front master cylinder reservoir cap screw
 Brake lever pivot bolt
 Brake lever pivot nut
 Front brake light switch screw
 Front master cylinder mounting bolt
 Front brake caliper assembly tone bolt
 Front brake caliper mounting flange bolt
 Rear master cylinder pivot nut
 Rear master cylinder mounting bolt
 Rear brake caliper bolt
 Rear brake caliper pin nut
 Pin plug
 Pin plug plug
 Brake hose oil bolt
 Brake caliper bleed valve
 Footpump bracket mounting bolt
 Rear master cylinder hose pin & screw

1 item 0.7 kgf-cm, 0.7 lbf-in
 1 item 0.7 kgf-cm, 0.7 lbf-in
 1 item 0.6 kgf-cm, 0.3 lbf-in
 1 item 0.7 kgf-cm, 0.7 lbf-in
 12 item 1.2 kgf-cm, 9 lbf-in
 22 item 0.3 kgf-cm, 2.4 lbf-in
 30 item 0.5 kgf-cm, 2.5 lbf-in
 17 item 1.7 kgf-cm, 13 lbf-in
 10 item 1.0 kgf-cm, 7 lbf-in
 23 item 0.5 kgf-cm, 17 lbf-in
 27 item 2.8 kgf-cm, 20 lbf-in
 17 item 1.7 kgf-cm, 12 lbf-in
 3 item 10.3 kgf-cm, 2.2 lbf-in
 34 item 0.5 kgf-cm, 25 lbf-in
 8 item 0.7 kgf-cm, 0.7 lbf-in
 27 item 2.7 kgf-cm, 2.0 lbf-in
 1 item 10.5 kgf-cm, 0.7 lbf-in

Apply a locking agent to the threads
 A.L.C. bolt

TOOL

Slipping plate

0.75" x 1.55" x 0.15"

TROUBLESHOOTING

Brake lever/pedal soft or spongy

- Air in hydraulic system
 Leaking hydraulic system
- Contaminated brake master
 Worn caliper piston seal
 Worn master cylinder piston cup
 Worn brake pads
- Contaminated caliper
 Caliper not sliding properly inner
- Low brake fluid level
- Clogged fluid passage
 Warped/deformed brake disc
 Stuck in wheel drum
- Sticking/worn master cylinder piston
- Contaminated master cylinder
- Bent brake lever/pedal

Brake lever/pedal fixed

- Engage brake system
- Brake lever not fully extended
 Caliper not fully extended
 Friction plate not fully engaged
- Worn caliper piston seal
- Sticking/worn master cylinder piston
- Bent brake lever/pedal

Brake disc

- Loose nut on disc
 Air in hydraulic system
 Caliper not fully extended
 Friction plate not fully engaged
 Caliper not fully extended
 Friction plate not fully engaged
 Sticking/worn master cylinder piston
 Caliper not fully extended

BRAKE FLUID REPLACEMENT/AIR BLEEDING

NOTICE

Do not allow foreign material to enter the system when filling the reservoir.

- Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.

BRAKE FLUID DRAINING

For the front brake, set the handbrake while the reservoir is parallel to the ground, before removing the reservoir cap.

Remove the screws and reservoir cap.

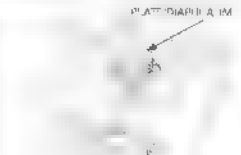
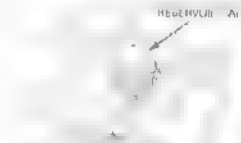
Remove the diaphragm plate and diaphragm.

Remove the cap and cap.

Remove the diaphragm plate and diaphragm.



PLATE DIAPHRAGM



Connect a bleed hose to the caliper bleed valve.



Open the bleed valve and pump the brake up 4-6 times.

Stop pumping the lever or pedal whenever more fluid flows out of the bleed valve.



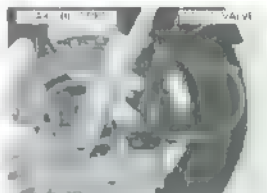
BRAKE FLUID FILLING/BLEEDING

Open the bleed valve.

Fill the reservoir with DOT 4 brake fluid. Insert a stop and return.

Notes:

Use only DOT 4 brake fluid from a sealed container. Do not use different types of fluid. They are not compatible.



Contents of the reservoir are enough to bleed the brake system.

Pump the brake pedal 4-6 times. Stop the bleed valve when the fluid level is almost at the reservoir is low.

When using a brake bleeding tool, follow the manufacturer's operating instructions.

Repeat the previous step procedures until air bubbles do not appear in the plastic hose.

Close the bleed valve and operate the brake lever or pedal.

If it still feels spongy, bleed the system again.

HYDRAULIC BRAKE

If a brake bleeder is not available, use the following procedure.

Pump up the system pressure with the lever or pedal until level of pads resistance at job.

Connect a bleed hose to the bleed valve and bleed the system as follows:

1. Loosen the bleed valve through the brake pads. Order the bleed valve 1/2 turn each time.

2. Release the lever or pedal and pump up the brake valve and bleed again.

Repeat steps 1 and 2 until bubbles stop appearing in the fluid coming out of the bleed valve. Tighten the bleed valve.

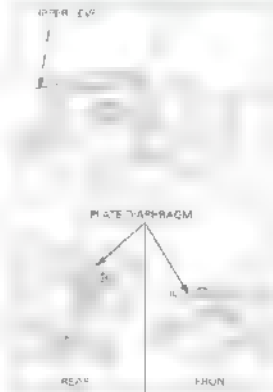
TORQUE: 8 Nm (0.5 kgf-m, 3.3 lbf-ft)

Filling of reservoir is as per manual.



FIGURE 15-6

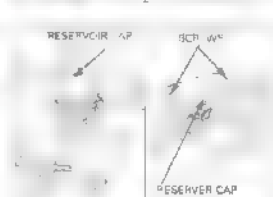
Install the macho and macho plate



On the front brake, install the reservoir cap, and tighten the screws to the specified torque.

TORQUE: 2 Nm (0.2 kgf-m, 1.4 lbf-ft)

On the rear brake, install the reservoir cap, and tighten the screws to the specified torque.



BRAKE PAD/DISC

FRONT BRAKE PAD REPLACEMENT

Removes the pad pin plug.



Loosen the pad pin.

Remove the bolts and brake pin plug at the same angle relative to the way to allow installation of new brake pads.

Reinstall the pin plug in its original position.



Pin from the brake pin.



Install the new brake pad.

Install the pad on the pin. Its arrow mark facing up as shown.



Push the pad against the inside of the used pin.

Tighten the pad pin.

TORQUE: 12 N·m (9.7 lbf·ft) to 12 lbf·ft.



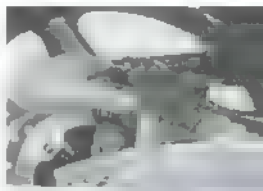
Insert and tighten the pad with drag.

TORQUE: 3 N·m (10.5 lbf·in, 2.3 lbf·ft).

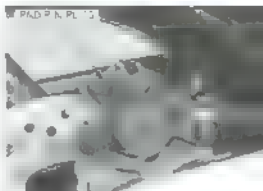


REAR BRAKE PAD REPLACEMENT

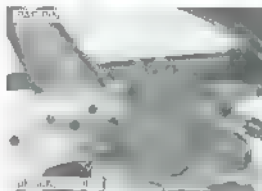
Push the inspection pin into all the rear disc grooves. Use the inspection pin to check the rear disc grooves. To check the rear disc grooves, use the inspection pin.



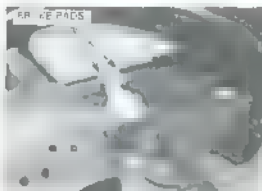
Remove the pad and pin.



Remove the pad pin.
Remove the brake master unit.



Flip the caliper up.
Remove the pad pin from the bracket.
Install the new brake pads.



Over the caliper while pushing the pads against the pad spring so the pad ends are positioned onto the rearward pin (the caliper bracket).

Install the pin at



Install and tighten the caliper bracket bolt.

TORQUE 23 Nm (17 lbf-ft, 17 lbf-ft)

Tighten the pad pin

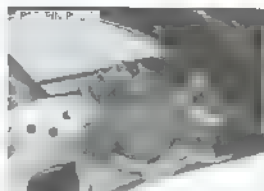
TORQUE 12 Nm (9 lbf-ft, 12 lbf-ft)



HYDRAULIC BRAKE

Install and tighten the lock pin plug.

TORQUE 3 N·m (0.3 kgf-m, 2.2 lbf-ft)



BRAKE DISC INSPECTION

Visually inspect the brake disc for damage or cracks.

Measure the brake disc thickness with a micrometer.

SERVICE LIMITS

FRONT 3.5 mm (0.14 in)

REAR 4.8 mm (0.19 in)

Replace the brake disc if the remaining thickness is less than the service limit.



Measure the brake disc warpage with a dial indicator.

SERVICE LIMITS

FRONT 0.10 mm (0.004 in)

REAR 0.30 mm (0.012 in)

Check the wheel bearings for excessive play. If the endplay exceeds the service limit, replace the brake disc if the wheel bearings are normal.

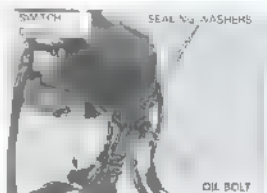


FRONT MASTER CYLINDER

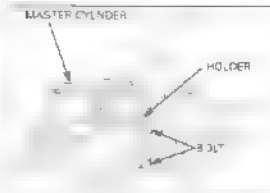
REMOVAL

Drain the front hydraulic brake system.

Disconnect the brake light switch wire connectors.
Remove the brake hose oil bolt, sealing washers and brake hose evictor.

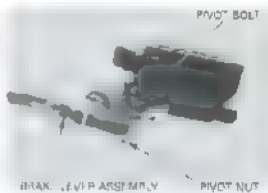


Remove the bolts from the master cylinder holder and remove the master cylinder assembly.



DISASSEMBLY

Remove the pivot bolt from the brake lever assembly.



Remove the screw and brake light switch.



Remove the boot.



HYDRAULIC BRAKE

Remove the snap ring from the master cylinder body using the screwdriver shown.

TOOL

Snap ring pliers

CD974-8A50001

SNAP RING

SNAP RING PLIERS



Remove the master piston and spring.

Clean the inside of the cylinder and reservoir with Brake Fluid.

MASTER CYLINDER

SPRING



INSPECTION

Check the piston for primary cup and secondary cup for signs of damage.

Inspect the master cylinder and piston for abnormal scratches.

Measure the master cylinder I.D.

SERVICE LIMIT 14.056 mm (0.5533 in.)



Measure the master cylinder piston O.D.

SERVICE LIMIT 13.945 mm (0.5489 in.)



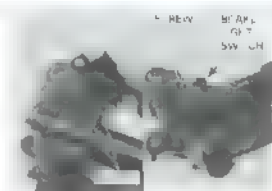
HYDRAULIC BRAKE

Apply silicon grease to the front side
inside the bar.



Install the brake light switch and tighten the screw to
the specified torque.

TORQUE: 1 N-m (0.1 kgf-m, 0.7 lbf-ft)



Apply the brake grease to the contact surfaces of the
brake lever and piston rod.

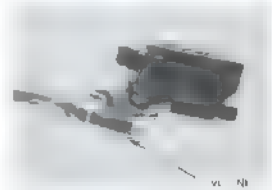
Install the brake lever assembly by tightening the **bracket bolt**
to the specified torque.

TORQUE: 1 N-m (0.1 kgf-m, 0.7 lbf-ft)



Push the piston bolt and tighten the lock nut to the
specified torque.

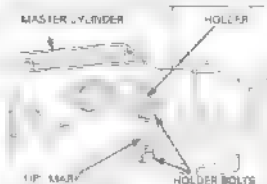
TORQUE: 5 N-m (0.5 kgf-m, 4.3 lbf-ft)



Place the master cylinder assembly on the handlebar. Align the end of the master cylinder with the punch mark on the handlebar.

Install the master cylinder holder with the "UP" mark facing up. Tighten the upper bolt first, then the lower bolt to the specified torque.

TORQUE: 12 Nm (11.2 lbf-ft), 9 lbf-in

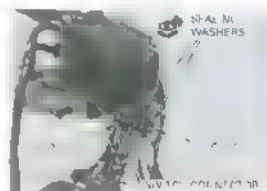


Install the brake hose outlet with the oil bolt and two sealing washers. Flush the outlet joint against the stopper, then tighten the oil bolt to the specified torque.

TORQUE: 34 Nm (25 lbf-ft), 25 lbf-in

Connect the brake fluid reservoir to the calipers.

Fill the reservoir to the upper level and bleed the brake system (page 8-4).

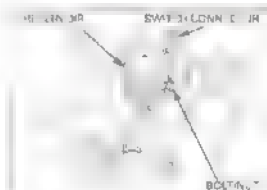


REAR MASTER CYLINDER

REMOVAL

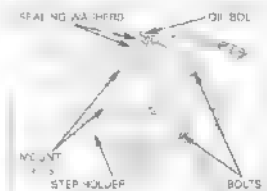
Drain the rear hydraulic system (page 15-8).

Disconnect the brake light switch YP connector. Remove the rear master cylinder mounting bracket.



Remove the brake hose oil bolt, sealing washers and brake hose.

Remove the rear master cylinder mounting bolts. Remove the socket bolts and factory brake assembly.



Avoid painting fluid or painted parts.



HYDRAULIC BRAKE

Remove and discard the brake pedal pivot cotter pin.
Remove the pin.

Remove the master cylinder mounting bolts, stop guard and master cylinder.



DISASSEMBLY

Remove the master cylinder from the vehicle and disconnect the lines.

Remove the master cylinder from the vehicle and disconnect the lines.



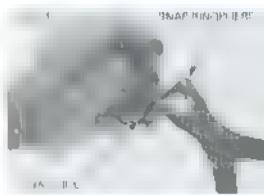
Remove the master cylinder.

Remove the snap ring from the master cylinder body using the special tool as shown.

NOTE:

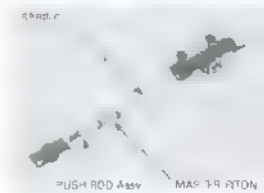
Use ring pliers.

97914-3A30001



Remove the push rod, master piston, primary cup and spring.

Place a gasket inside the cylinder with brake fluid.



INSPECTION

Check the primary and secondary cups for fatigue or damage.
Check the master cylinder and piston for wear and tear.
Measure the master cylinder bore.

Measure the master cylinder bore.

SERVICE LIMIT 12.755 mm (0.5022 in)

Measure the master cylinder bore.

SERVICE LIMIT 12.845 mm (0.5078 in)



ASSEMBLY



Coat all parts with clean brake fluid before assembly.

Oil the master cylinder.

Slide the master cylinder into the master cylinder body.

Apply the master cylinder to the master cylinder body.



HYDRAULIC BRAKE

4. Install the reservoir into the master cylinder.

TOOL
Snap ring pliers 07914-6A50001

Apply silicone grease to the O-ring inside master cylinder.

Apply the O-ring to the O-ring groove in the master cylinder.

Install the reservoir joint into the master cylinder.

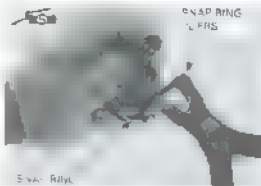
Install and tighten the screw securely.

Connect the reservoir hose to the reservoir joint.

If the push rod is damaged or bent, replace it with a new one.

After adjustment, tighten the lock nut to the specified torque.

TORQUE 12 N·m (1.2 kgf·m) 1.2 kgf·m



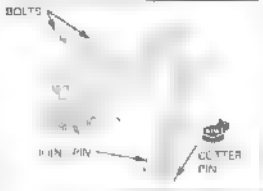
SNAP RING



INSTALLATION

Place the master cylinder onto the main footpeg bracket, install the master cylinder mounting bolts.

Connect the brake pedal to the push rod lower joint. Install the joint pin and secure it with a new cotter pin.



Insert the driver footpeg bracket into the main footpeg bracket, install the socket bolts to the specified torque.

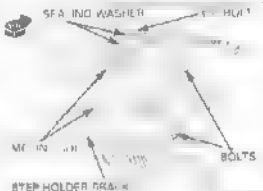
TORQUE: 27 N·m (2.5 kgf·m, 20 lbf·ft)

Tighten the master cylinder mounting bolts to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Insert the brake hose with the oil bolt and the sealing washers.

Push the master joint against the stopper, then tighten the oil bolt to the specified torque.



TORQUE: 34 N·m (3.5 kgf·m, 25 lbf·ft)

Install and tighten the brake reservoir mounting bolts to the specified torque.

TORQUE: 18 N·m (1.8 kgf·m, 13 lbf·ft)

Connect the brake light switch 2P (Black) connector.

Fill the reservoir to the upper level and bleed the brake system (page 15-4).



FRONT BRAKE CALIPER

REMOVAL

Drain the front brake hydraulic system (page 15-4).

Remove the oil bolt, sealing washers and brake hose master joint.

Remove the caliper mounting bolts and caliper.

Remove the brake pads (page 15-7).



DISASSEMBLY

Install corrugated cardboard or soft wood sheet between the pistons.

Apply small squeeze of air pressure to the fluid inlet to remove the pistons.

Remove the four caliper assembly bolts and separate the caliper halves.

After the pistons
are removed,
the caliper
assembly bolts
are removed.

Remove the following:

- Joint seals
- Caliper piston A
- Caliper piston B

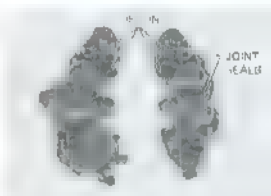
Be careful not to
damage the
piston seals.

Push the dust seals or O-ring seals in and pull out.

Clean the seal grooves with clean brake fluid.



ASSEMBLY BOLTS



JOINT
SEALS



PISTON SEAL

INSPECTION

Check the caliper cylinder for scoring or other damage.

Measure the caliper cylinder I.D.

SERVICE LIMITS

- A: 30.29 mm (1.192 in)
B: 29.60 mm (1.085 in)



Check the caliper pistons for scratches, scoring or other damage.

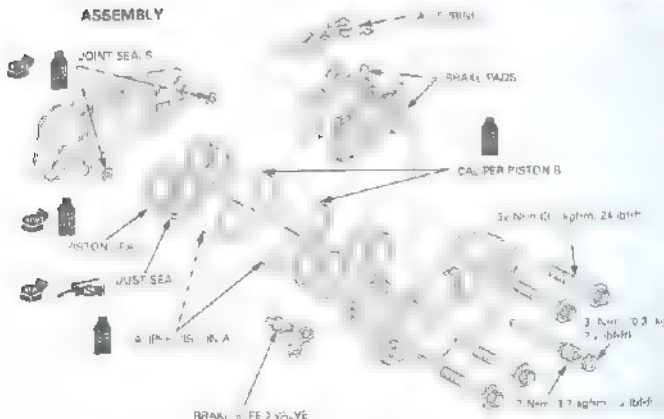
Measure the caliper piston O.D.

SERVICE LIMITS

- A: 20.14 mm (0.787 in)
B: 25.81 mm (1.015 in)



ASSEMBLY



HYDRAULIC BRAKE

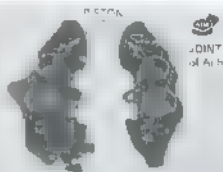
Fit the new piston seals as in Fig. 15-24. Lubricate the new dust seals with grease.

Install the piston and dust seal into the groove of the caliper body.

Coat the caliper pistons with clean brake fluid and push them into the cylinders as well as the rear ends toward a pad.



Install the new joint seals into the third passages of the caliper.



Assemble the caliper wheel.

Apply a locking agent to the caliper wheel. Apply the wheel.

Install the caliper and wheel assembly to the axle.

TORQUE 32 Nm (3 kgf-m, 24 lbf-ft)



ASSEMBLY BOLTS

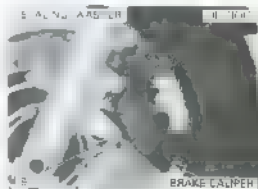
INSTALLATION

Install the brake pads (page 15-18).

Install the brake caliper on the wheel hub. Install the caliper and wheel assembly to the axle.

TORQUE 30 Nm (3.1 kgf-m, 22 lbf-ft)

Install the brake hose (page 15-18) to the caliper brake with the new seal.



Push the brake hose nylock to the stopper on the caliper. Then tighten the nut bolt to the specified torque.

TORQUE 34 N·m (3.5 kgf·m, 25 lbf·ft)

Fill and bleed the front brake hydraulic system (page 15-4)



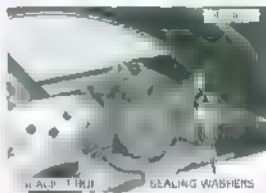
REAR BRAKE CALIPER

INSPECTION

Check the rear brake hydraulic system (page 15-5)

Inspect the caliper bracket rail.
Remove the rear wheel (page 14-3)

Remove the oil seal, sealant, water and brake hose nylock from it.



DISASSEMBLY

Remove the spring, bracket and body from the caliper body.

Remove the caliper body from the caliper bracket.
Remove the spring from the caliper bracket.



Place a shop towel over the oil seal.
Push it up with a screwdriver to the main frame and apply small amounts of air pressure to the fluid inlet to remove the oil seal.



HYDRAULIC BRAKE

Remove the master cylinder and install the slave cylinder.

1. Clean the seal grooves with steel brush and



INSPECTION

Check the cylinder for scoring or other damage.

Measure the cylinder bore ID.

SERVICE LIMIT 38.24 mm (1.506 in)

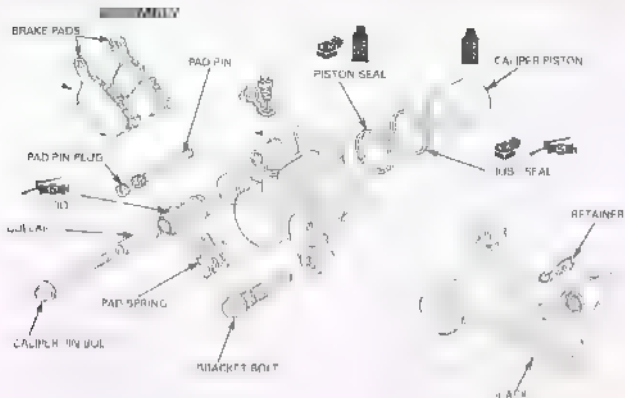


Check the cylinder for scoring or other damage.

Measure the cylinder bore ID.

SERVICE LIMIT 38.24 mm (1.506 in)





Cool the new piston seal with clean brake fluid
 Wipe the new dust seal with silicone grease

In an 1840s trial and during the 1850s the presence of a single body,

Insert it into the caliper cylinder with the opening up toward the head.

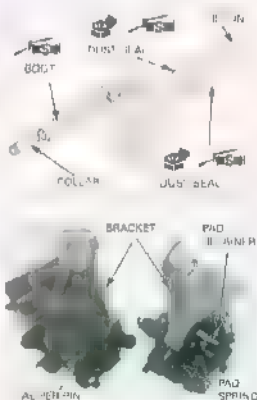
Apply with one prepared to be inside of the bracket pin.
Insert the bracket pin into the collar and collar into the collar.

Install the pad retainer into the bracket.

Apply silicone grease to the caliper pin and install the caliper body to the wheel.

Install the pool spring into the valve block.

Install the caliper bracket bolt and brake pads (pages 15-8).



HYDRAULIC BRAKE

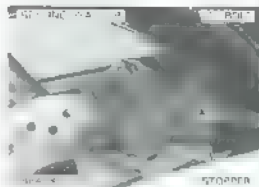
INSTALLATION

Install the wheel (page 14-5).

Install the brake caliper-bracket assembly onto the guide of the swingarm (page 14-10).

Install and tighten the oil pin bracket bolt to the specified torque.

TORQUE 23 Nm (2.3 kgf-m, 17 lbf-ft)



Install the brake hose eyelet to the frame body with two new sealing washers and oil bolt.

Push the brake hose eyelet to the stopper on the caliper, then tighten the oil bolt to the specified torque.

TORQUE 34 Nm (3.5 kgf-m, 25 lbf-ft)

Fill and bleed the rear brake hydraulic system.

See 14-14.

BRAKE PEDAL

REMOVAL

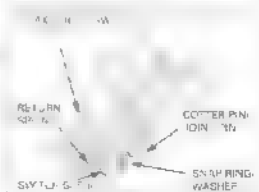
Remove the footpeg bracket mounting bolts and bracket assembly from the frame.



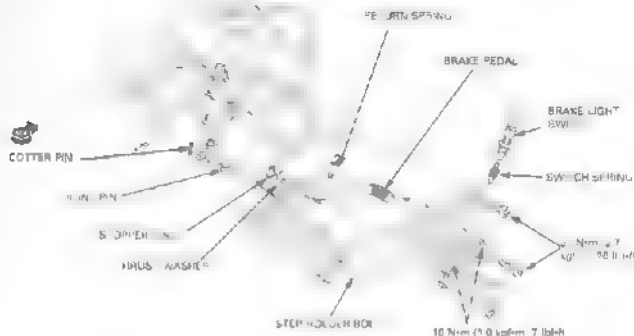
Remove the pin at the brake pedal return spring.
Remove the joint pin.

Unhook the return spring and remove the brake light switch from the steel holder.
Unhook the brake pedal return spring.

Turn the footpeg assembly to the side.
Remove the brake pedal from the footpeg.



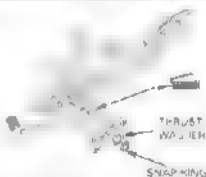
INSTALLATION



Apply grease to the sliding surface of the brake pedal and foot.

Install the brake pedal assembly and secure it to the frame.

Secure the pedal with a cotter pin.



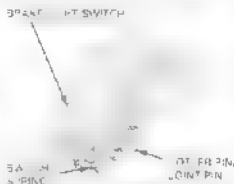
Hook the brake pedal return spring.

Install the brake light switch and hook the return spring.

Connect the brake pedal to the pivot rod cross joint.

Install the joint pin and secure it with a new cotter pin.

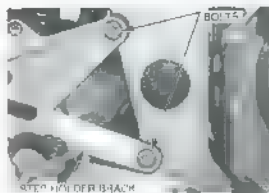
Install the top driver footplate bracket assembly to the frame.



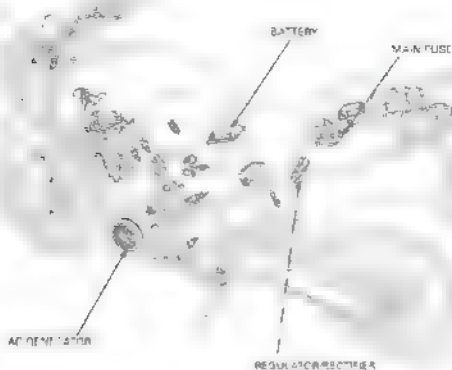
HYDRAULIC BRAKE

Install and tighten the right footpeg bracket welder bolts to the specified torque.

TORQUE 37 N·m (2.8 kg-m, 28 lb-ft)



SYSTEM DIAGRAM



16. BATTERY/CHARGING SYSTEM

SYSTEM DIAGRAM	16-0	CHARGING SYSTEM INSPECTION	16-8
SERVICE INFORMATION	16-1	ALTERNATOR CHARGING COIL	16-9
TROUBLESHOOTING	16-3	REGULATOR/RECTIFIER	16-9
BATTERY	16-5		

SERVICE INFORMATION

GENERAL

▲ WARNING

החלטתו של בית דין זה היא סופית, ואין להעלות עליו ערעור. כל מי שיש לו טענות או שאלות בנוגע להחלטת בית דין זה, יוכל לכתוב למנהל המוסד, בכתב, תוך 14 יום מיום קבלת ההחלטה. המנהל יענה על שאלותיו ויפתור את טענותיו, אם יראה לנכון. המנהל יענה על שאלותיו ויפתור את טענותיו, אם יראה לנכון.

The safety committee will also be involved with the design of any new work clothes. We will produce a clothing and a face shield.

It is particularly gratifying that our paper has been cited by a number of authors.

If you're a fan of the show, you'll want to watch it as soon as it's available on DVD.

Electronically or personally

Immediate.

• Wenn wir die Werte μ und σ kennen, dann ist die Wahrscheinlichkeit, dass eine Zufallsvariable X einen Wert annimmt, der zwischen $\mu - \sigma$ und $\mu + \sigma$ liegt, gleich 68,27%.

Then switch a CV and current is present

photos the stored between America's Red Cross.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

* He is a noble gas; it does not react with anything.

1. *Chlorophyll a* (Chl *a*) is the primary photosynthetic pigment in most plants and algae. It is a green pigment that absorbs light energy in the blue-violet and red-orange regions of the visible spectrum.

(The following text is mirrored from the top of the page)

hence, the electrophoresis have shown down much

1. Main body of the report should be written in the past tense, as if you were reporting on a completed project.

[illegible]

Value of α = 0.05

charging time may damage the battery.

BATTERY TEST NO.

Refer to the battery type of the T-9000 for information on the recommended battery label. It is important to follow the instructions on the label to ensure safe operation.

Recommended battery tested: **RA-210-01** at **100%**

BATTERY/CHARGING SYSTEM

SPECIFICATIONS

ITEM		SPECIFICATIONS	
Battery	Capacity	35 C.E.A.	
	Current leakage	2 mA max	
	Voltage 20-25.5	1.0-1.4 v	
	Charging current	Below 1 v	
Alternator	Output	2.5-5.0 A	
	Output voltage	13.5-14.5 v	

TOOLS

Digital multimeter	Circuit tester	Universal high impedance probe and equipment program
Battery tester	(WZ-10-41)	Universal high impedance probe and equipment program or BM210
Chloride battery charger	PAC-11-1	Universal high impedance probe and equipment program

TROUBLESHOOTING

BATTERY IS DAMAGED OR WEAR

Remove the battery (page 16-5).
Check the battery condition using the recommended battery tester.

RECOMMENDED BATTERY TESTER

BM 210-AH or BM 210-USA only

Correct



Install the battery (page 16-5).
Check the battery current leakage (work test) (page 16-8).

Correct

⇒ Insufficiently maintain generator charging and check the battery system leakage.

Correct

Correct

Incorrect

⇒ Shorted wire harness
Faulty ignition switch

⇒ Faulty regulator/rectifier

Check the alternator charging coil (page 16-7).

Incorrect

⇒ Faulty charging coil

STANDARD: 9.1 ~ 10.5 (20°C/68°F)

Correct

Measure and record the battery voltage using a digital multimeter (page 8-8).
Start the engine.
Measure the charging voltage (page 16-6).
Compare the measurement to the result of the following calculation.

Correct

⇒ Faulty battery

STANDARD

Measured battery voltage + Measured charging voltage = 15.5 V

Incorrect



BATTERY/CHARGING SYSTEM

Check the voltage at the resistor in the regulator
circuit to see if the voltage is correct.

Correct

Notes

- Open circuit - relayed wire
- Loose - bad contacts at battery terminal
- Shorter wire harness

- Faulty regulator/rectifier

BATTERY

REMOVAL/INSTALLATION

Remove the side cover (page 2-2).

Disconnect the battery band and pull out the battery from the battery case.

Disconnect the negative cable and then the positive cable, and remove the battery.

Install the battery in the reverse order of removal. After installing the battery, coat the terminals with terminal grease.

Install the side cover (page 2-2).

NEGATIVE TERMINAL



VOLTAGE INSPECTION

Measure the battery voltage using a digital multimeter.

VOLTAGE

Fully charged 12.6 - 12.8V

Under charged Below 12.0V

TIDOL

Digital multimeter

Commercially available or available through American Honda Tool and Equipment Program.



BATTERY TESTING

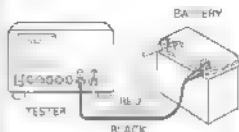
Remove the battery (page 17-41)

Securely connect the tester's positive (+) cable first. Then connect the negative (-) cable.

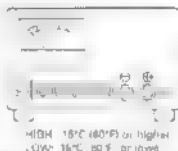
TOOL

Battery tester

BMW-210-AM
or BMW-210/L, S&A only



Set the temperature switch to HIGH or LOW depending on the ambient temperature.



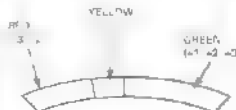
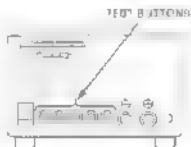
1. To A
check DOD AND
range the battery
function setting

Push in the appropriate test button for 3 seconds and read the condition of the battery on the meter.

NOTICE

- To avoid damaging the tester only test batteries under the following conditions:
 - 1. The battery is not overcharged.
 - 2. The battery is not frozen.
 - 3. The battery is not shorted.
 - 4. The battery is not damaged.
 - 5. The battery is not leaking.
 - 6. The battery is not overheated.
 - 7. The battery is not under load.
 - 8. The battery is not under test.
 - 9. The battery is not under repair.
 - 10. The battery is not under maintenance.
 - 11. The battery is not under inspection.
 - 12. The battery is not under evaluation.
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 - 14. The battery is not under analysis.
 - 15. The battery is not under investigation.
 - 16. The battery is not under research.
 - 17. The battery is not under development.
 - 18. The battery is not under production.
 - 19. The battery is not under distribution.
 - 20. The battery is not under sale.
 - 21. The battery is not under use.
 - 22. The battery is not under disposal.
 - 23. The battery is not under recycling.
 - 24. The battery is not under reuse.
 - 25. The battery is not under repackaging.
 - 26. The battery is not under reconditioning.
 - 27. The battery is not under refurbishing.
 - 28. The battery is not under restoration.
 - 29. The battery is not under renovation.
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 - 99. The battery is not under reconstruction.
 - 100. The battery is not under reconstruction.

The meter of a test on the meter scale should read to the right hand rating of the battery. Any battery reading in the red zone is OK. Batteries should only be charged by a charger or a 12V 10A power supply.



BATTERY CHARGING

Remove the battery page 17-41

NOTICE

- Make sure the area around the charger is well ventilated, clear of flammable materials and free from fumes, humidity, water and dust.
- Clean the battery terminals and position the battery as far away from the charger as the leads will permit.
- Do not place batteries below the charger. Gases from the battery may explode and damage the charger.
- Do not place batteries on top of the charge. Be sure the air vents are not blocked.

1 Turn the "POWER" switch to "OFF"

2 Set the BATTERY AMPERE SELECTOR SWITCH for the proper battery rating, charge

POOL

Charge battery charger

MC10717
U.S.A. only

BATTERY AMPERE
SELECTOR SWITCH

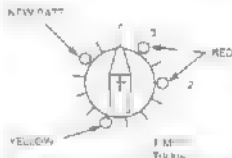


Set the appropriate amp. hour rating.

3 Set the "TIMER" to the position indicated by the Honda Battery Tester RED-3, RED-2 or VEL. On 1. If you are charging a new battery, set the switch to the NEW BATT position.

4 Attach the clamps to the battery terminals, red to positive, black to negative.

5 Charge the battery at 100% when the "POWER" switch is turned to "OFF".



5 Turn the "POWER" switch to "ON"

6 When the timer reaches the "Hold" position, the charging cycle is complete. Turn the "POWER" switch to "OFF" and disconnect the clamps.

7 Let the battery cool for at least 10 minutes or until gassing subsides after charging.

8 Note: The battery is to be used only for the purpose of starting the engine if necessary during the charging process.

CHARGING SYSTEM INSPECTION

CURRENT LEAKAGE INSPECTION

- 1 Remove the battery (page 16-51).
- 2 Turn the ignition switch off and disconnect the negative cable of the battery. Connect the negative cable of the battery to the negative terminal of the battery.
- 3 Turn the ignition switch on and check the current leakage.

NOTICE

- When measuring current using a tester, set it to a high range and then bring the range down to an appropriate level. Current flow higher than the range selected may blow out the fuse in the tester. While measuring current, do not turn the ignition on. A sudden surge of current may blow out the fuse in the tester.

SPECIFIED CURRENT LEAKAGE 1.2 mA max

If current leakage exceeds the specified value, a shorted circuit is likely. Locate the short by disconnecting each section one by one and measuring the current.



CHARGING VOLTAGE INSPECTION

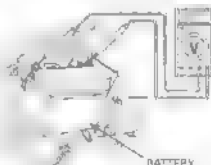
- 1 Ensure the battery is in good condition before performing this test.

Warm up the engine to normal operating temperature.
Stop the engine, and connect the multimeter as shown.

To prevent a short, make absolutely certain when are the positive and negative terminals or cable.

Run the engine.
With the headlight on 10 beam, measure the voltage on the multimeter when the engine runs at 5,000 rpm.

Standard Measured battery voltage (page 16-51) <
Measured charging voltage (see above) < 15.5 V at 5,000 rpm



44
B F 6
P V H 25



ALTERNATOR CHARGING COIL

INSPECTION

Remove the left side cover (page 2-4).

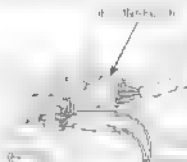
Disconnect the alternator 3P connector.

Check the resistance between all three yellow terminals.

STANDARD: 0.1 - 0.8 at 20°C/68°F

Check for continuity between all three yellow terminals and Ground.
There should be no continuity.

If readings are out, verify the test procedure and wiring.
If the readings are still out, replace the charging coil.
Refer to section 10 for stator removal.



REGULATOR/RECTIFIER

SYSTEM INSPECTION

Remove the rear cover (page 2-21).

Item	Terminal	Splice to
Battery	Red/White	Battery voltage
the plug	Black	to ground
ing	Ground	
Charging coil	Yellow and	0.1 - 0.8
into	Yellow	at 20°C/68°F
Ground wire	Green & 0	to ground
	ground	sh. 0.1 - 0.5

Disconnect the regulator rectifier 4P connector and check it for loose contact or corroded terminals.



BATTERY/CHARGING SYSTEM

The regulated voltage reading after step 12 is our check for operation. The voltage should be around 14.0 volts. Compare with 13.5 to 14.5 volts. If all components of the charging system are working, there are no voltage drops at the regulator or the connections for the battery terminals.



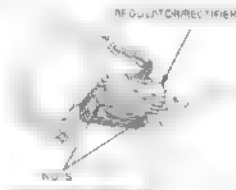
REMOVAL/INSTALLATION

Disconnect the alternator electrical connector.



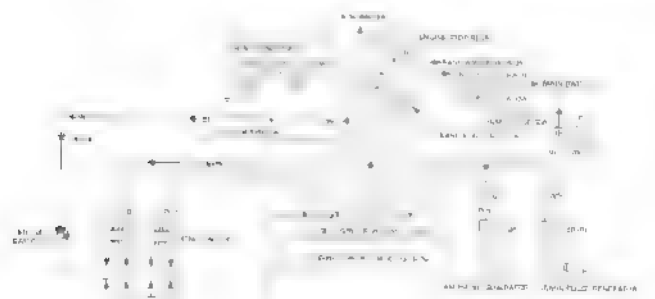
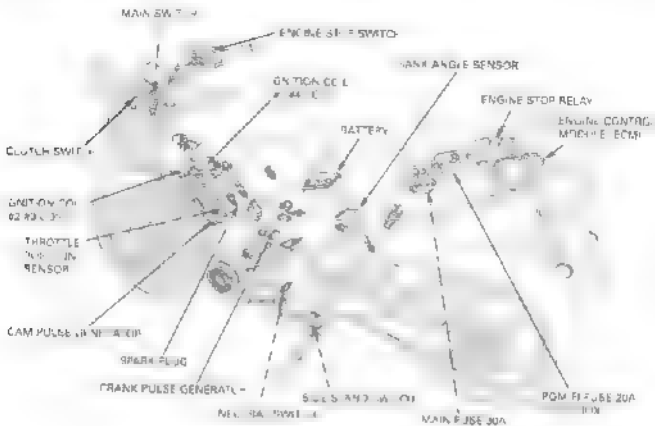
Disconnect the alternator electrical connector. Remove the two nuts and regulator/rectifier.

Installation is in the reverse order of removal.





SYSTEM DIAGRAM



17. IGNITION SYSTEM

SYSTEM DIAGRAM	17-0	IGNITION COIL	17-7
SERVICE INFORMATION	17-1	IGNITION PULSE GENERATOR	17-7
TROUBLESHOOTING	17-3	IGNITION TIMING	17-10
IGNITION SYSTEM INSPECTION	17-4	ECM (ENGINE CONTROL MODULE)	17-11

SERVICE INFORMATION

GENERAL

Spark plug wire components may be damaged. Terminals on connectors are connected to the correct wires. Ignition switch is ON and voltage is present.

When servicing the ignition system, always use the proper procedure for removing the ignition coil (page 17-7).

The ignition pulse generator (IPG) is a 12V battery-powered device that generates a pulse for the ECM.

The ignition timing is not adjustable. To adjust the timing, the ECM must be reprogrammed.

The ECM must be reprogrammed if the spark plug wires are replaced or the spark plug wires are damaged. The ECM must be reprogrammed if the spark plug wires are replaced or the spark plug wires are damaged.

Always use the correct procedure for removing the spark plug wires. Do not use the wrong procedure. Make sure the spark plug wires are properly connected. Do not use the wrong procedure. Make sure the spark plug wires are properly connected.

When working on the ignition system, always use the correct procedure for removing the spark plug wires. Do not use the wrong procedure. Make sure the spark plug wires are properly connected.

SPECIFICATIONS

ITEM

SPECIFICATIONS

Spark plug gap	No. 4	0.013 in. (0.33 mm)
Spark plug gap	WEEKS	0.013 in. (0.33 mm)
Ignition coil peak voltage		180 V maximum
Ignition pulse generator peak voltage		9.7 V maximum
Ignition timing (RPM)		8° BTDC at idle

IGNITION SYSTEM

TORQUE VALUES

Fitting hole cap

Spark plug

Ignition pulse generator cover

Ignition pulse generator rotor special bolt

18 Nm 1.8 kg-m, 13 lbf-ft

17 Nm 1.7 kg-m, 12 lbf-ft

10 Nm 1.0 kg-m, 7 lbf-ft

29 Nm 3.0 kg-m, 21 lbf-ft

Apply grease to the threads

Apply sealant to the threads

TOOLS

Peak voltage tester (U.S.A. only)

Peak voltage adaptor

HGS-002010 (not available in U.S.A.) with

U.S.A. only available digital multimeter impedance is 1MΩ or
more

TROUBLESHOOTING

- Inspect the following before diagnosing the system

Faulty spark plug

Check spark plug cap or spark plug wire connection

When the spark plug or wire is disconnected, it should be grounded.

If there is no spark at either cylinder, disconnect the spark plug wire at known good one and perform the spark test.

If there is spark, the disconnected ignition coil is faulty

Initial voltage of the ignition primary circuit is battery voltage with the engine cranked. An engine also cranked at 3000 rpm (The engine is not cranked by the starter motor)

Unusual conditions

Ignition coil
or primary
voltage

No normal voltage with ignition and
initial voltage is 2 ~ 4 V while cranking the
engine (all components are normal)

Initial voltage is normal, but it drops
when 2 ~ 4 V while cranking the
engine

Initial voltage is normal, but peak
voltage while cranking the engine

Initial voltage is normal, but peak volt-
age is lower than standard value.

Initial and peak voltage are normal, but
does not spark.

Ignition pulse
generator

Peak voltage is lower than standard
value.

No peak voltage.

Probable cause (Check in numerical order)

1. Check the battery voltage.
2. Check the battery voltage with a wire connected to ground.
3. Check the battery voltage with a wire connected to ground.
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100. Check the battery voltage with a wire connected to ground.

IGNITION SYSTEM INSPECTION

- If there is no spark at any plug, check as:
 - disconnected for loose or poor contact. Before measuring each peak voltage.
- Use a recommended digital multimeter or commercially available digital multimeters with an impedance of 10 M Ω /DCV minimum.
- The display value differs depending upon the internal impedance of the multimeter.
- If the Invis diagnostic tracer model 825E is used, follow the manufacturer's instruction.

Connect the peak voltage tester or peak voltage adaptor to the digital multimeter.

TOOLS

Peak voltage tester (U.S.A. only)

Peak voltage adaptor 6746J1-800/100
Not available in U.S.A.

With commercially available digital multimeter
Impedance 10 M Ω /DCV minimum

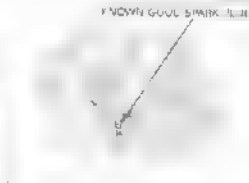


IGNITION COIL PRIMARY PEAK VOLTAGE

- Check all system components before inspection. If the system is disconnected, inspect each voltage that the system.
- Check cylinder compression and check all the spark plugs are installed correctly.

Open and support the front end of the suspension.

Shift the vehicle into the neutral or disconnect all the battery cables from the battery. Disconnect the ground cable of the battery. Disconnect the spark plug to the cylinder head as shown in the figure.



With the ignition coil primary wire connected, connect the peak voltage adaptor or timing tester to the ignition coil.

CONNECTION:

No 1 NO 6 coil

Yellow/Blue terminal (+) - Body ground -

No 2 NO 3 coil

Blue/Yellow terminal (+) - Body ground -

Turn the ignition switch ON and the engine switch to RUN.

Check for initial voltage at this time.

The battery voltage should be measured.

If the initial voltage cannot be measured, check the battery voltage first. If the voltage is low, the battery should be recharged.

Shift the transmission into neutral.

Crank the engine with the starter motor and check ignition coil primary peak voltage.

PEAK VOLTAGE 160V minimum

If the peak voltage is abnormal, check for an open circuit or poor connection in Yellow/blue and Blue/yellow wires.

If no defects are found in the harness, refer to the troubleshooting chart on page 17-3.

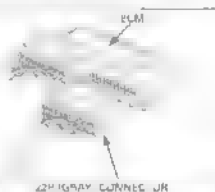
IGNITION PULSE GENERATOR PEAK VOLTAGE

- Check all system connections before inspection. If the system is disconnected, correct peak voltage might be misdiagnosed.
- Check cylinder compression and check that the spark plugs are installed correctly.

Disconnect the 22P (Gray) connector from the ECM (Image 5-78).



PEAK VOLTAGE ADAPTOR



22P (GRAY) CONNECTOR

IGNITION SYSTEM

Connect the peak voltage tester or peak voltage adaptor probes to the connector terminal of the wire harness side and ground.

TOOLS

Peak voltage tester (U.S.A. only)

Peak voltage adaptor 62HKGJ-0820108
(not available in U.S.A.)

with commercially available digital multimeter
(impedance 10 M Ω /DCV minimum)

CONNECTION

Yellow terminal (+) - White/yellow (-)

avoid touching
the probe tip
to the other
terminal or
ground when
checking

Shift the transmission into neutral
with the engine with the starter motor switch in the
ON position.

PEAK VOLTAGE 87 V minimum

If the peak voltage measured at the ECM multi-con-
nector is abnormal, measure the peak voltage at the
ignition pulse generator connector.

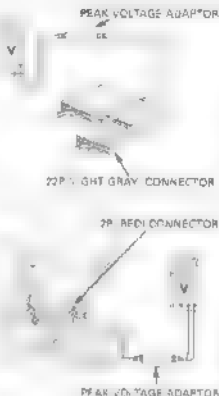
Remove the right side cover (page 27)

Disconnect the ignition pulse generator 2P (Red) con-
nector and connect the tester probes to the terminals
Yellow and White/yellow.

In the same manner as at the ECM connector, mea-
sure the peak voltage and compare it to the voltage
measured at the ECM connector.

- If the peak voltage measured at the ECM is abnor-
mal and the one measured at the ignition pulse
generator is normal, the wire harness has an open
circuit or loose connection.
- If the peak voltage is lower than standard value,
follow the checks described in the troubleshooting
chart (page 37).

Install the removed parts in the reverse order of
removal.



IGNITION COIL

REMOVAL/INSTALLATION

NO.1/NO.4 coil

Open and support the front end of the fuel tank (page 3.4).

Remove the spark plug cap.

Disconnect the ignition primary wires.

Remove the bolts, clamp, spacer, collar and the ignition coil.

Installation is in the reverse order of removal.

NO.2/NO.3 coil

Open and support the front end of the fuel tank (page 3.4).

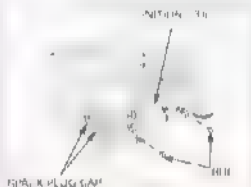
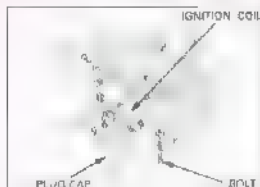
Remove the spark plug cap.

Disconnect the ignition primary wires.

Remove the bolts and ignition coil assembly.

Remove the collar, spacer and collar from the ignition coil.

Installation is in the reverse order of removal.

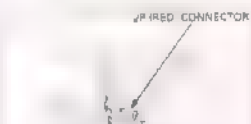


IGNITION PULSE GENERATOR

REMOVAL

Remove the side cover (page 3.4).

Disconnect the ignition pulse generator 2P Redi
connector.

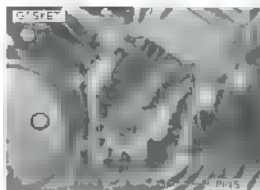


Remove the bolts and ignition pulse generator cover.

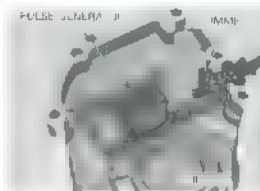


IGNITION SYSTEM

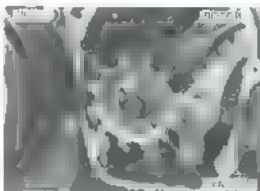
Remove the dowel pins and gasket.



Remove the wire grommet from the hole.
Remove the bolts and ignition pulse generator.



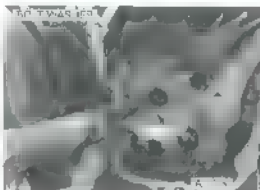
Push the transmission into 1st gear and apply the rear brake.
Remove the ignition pulse generator assembly.



INSTALLATION

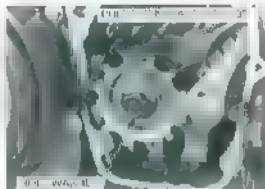
Install the ignition pulse generator rotor by aligning the wide groove with the wide tooth of the crankshaft.

Install the washer and nut and bolt.

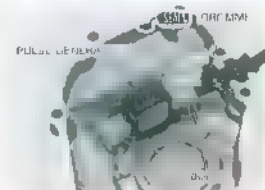


Shift the transmission into 8th gear and apply the parking brake.
Tighten the ignition pulse generator rotor bolt to the specified torque.

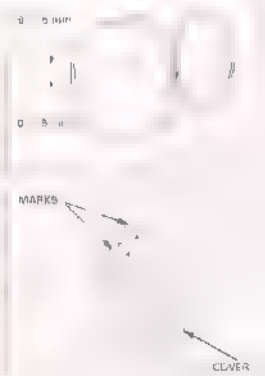
TORQUE 53 N·m (6.6 kgf-m, 43 lb-ft)



Install the ignition pulse generator cover and secure it.
Apply sealant to the wire terminals, then install it into the distributor cap.



Apply sealant to the terminals as shown.

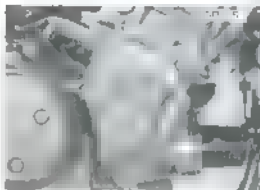


Apply sealant to the bolt threads, then install the terminal via the mark of the ignition pulse generator cover.

IGNITION SYSTEM

Install the ignition distributor cap.
Install the ignition coil and distributor cap over bolts to specified torque.

TORQUE: 70 N·m (10 kgf-m, 7 lbf-ft).



Route the ignition pulse generator wire properly, connect the 2P Red connector.

Install the removed parts in the reverse order of removal.

2P (RED) CONNECTOR



IGNITION TIMING

Warm up the engine.

Stop the engine and remove the timing hose cap.



1. Turn the engine clockwise until the timing mark on the crankshaft pulley is aligned with the timing mark on the timing cover.



Start the engine and let it idle.

IDLE SPEED: $1,200 \pm 100$ min. (rpm)

The ignition timing is correct if the index mark on the ignition pulse generator cover align with the index line of the "F" mark and center line on the gear on pulse generator rotor.

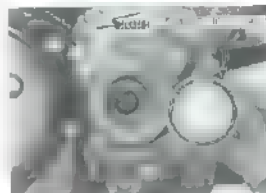
Increase the engine speed by turning the throttle stop screw and make sure the "F" mark begins to move in counterclockwise.

Check that the O-ring is in good condition, replace if necessary.

Apply grease to the timing hole cap threads and install the O-ring and timing hole cap.

Tighten the timing hole cap to the specified torque.

TORQUE: 18 N·m (1.8 kgf-m, 13 lbf-ft)



ECM (ENGINE CONTROL MODULE)

REMOVAL/INSTALLATION

Remove the rear cover (page 2).

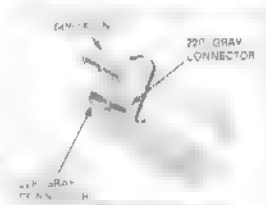
Remove the rear side bolts of the rear bracket.

Disconnect the ECM 22P black 22P gray

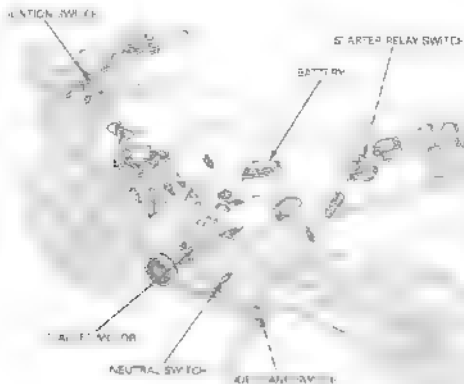
and sensors.

Remove the ECM.

When the removed ECM is not covered, it is removed.



SYSTEM DIAGRAM



18. ELECTRIC STARTER

SYSTEM DIAGRAM	18-0	STARTER MOTOR	18-4
SERVICE INFORMATION	18-1	STARTER RELAY SWITCH	18-10
TROUBLESHOOTING	18-2	DIODE	18-11

SERVICE INFORMATION

GENERAL

Always turn the ignition switch OFF briefly as service of the electric motor. The motor could suddenly start causing serious injury.

When working on the starter system, always follow the steps in the troubleshooting flow chart on page 18-2.

A weak battery will not enable the electric motor to turn quickly enough to properly re-engage the pinion gear.

If the battery is not flowing through the starter solenoid while the engine is not cranking over, the starter motor may be damaged.

Refer to 18-1 for starter relay servicing.

See section 6 for following components:

Ignition switch

Ignition stop control

Starter relay

Neutral switch

Side stand switch

Starter switch

SPECIFICATION

Unit: mm (in)

ITEM

STANDARD

SERVICE LIMIT

Starter motor assembly

120 ± 3.0 (4.7 ± 0.1)

4.5 (0.18)

TORQUE VALUE

Starter motor terminal nut

12 N·m (1.2 kgf-m, 9 lbf-ft)

TROUBLESHOOTING

Starter motor does not turn

- Check for a blown main or sub fuse before starting.
- Make sure the battery is fully charged and in good condition.

Check the starter relay switch for correct operation. You should hear the relay click when the starter switch is fully depressed.

Click is heard

Apply battery voltage to the starter motor directly to test the operation.

Normal

Abnormal

- Poorly connected engine motor cable and/or starter relay wires (page 18-10).

- Faulty starter motor (page 18-6).

Click is not heard

Disconnect the starter relay switch ground to check the relay. If the relay does not click, the battery is insufficient.

1. Ground the battery switch wire to the engine and check if the relay clicks. If it does not click, the battery is weak.
2. Ground the battery to the positive terminal of the switch line in any gear except neutral and with the clutch lever pulled in and the slide stand up.

Normal

Abnormal

- Faulty ground switch (page 18-20).
- Faulty battery and battery hold-down device. Battery should seat in slots provided and be secured by the hold-down device.

Insufficient

- Faulty electrical power supply, starter motor.
- Blown fuse or blown fuse holder. Check the fuse on the back of connector. Check the fuse location.

Check the starter relay switch operation. If the relay does not click, the battery is insufficient. Check the battery voltage. If the battery voltage is low, the battery is weak. Check the battery terminals. If the terminals are loose, tighten them. Check the battery electrolyte level. If the level is low, add distilled water. Check the battery age. If the battery is old, replace it.

Battery voltage registered

Normal

- Faulty or worn starter relay switch.

Check the starter relay switch operation.

Abnormal

- Faulty starter relay switch.

The starter motor turns when the transfer switch is in neutral, but does not turn with the transmission in any position except neutral with the slide stand up and the clutch lever pulled in.

Check the clutch switch operation

Normal

⚡ = Faulty clutch switch

Normal

⚡

Check the slide stand switch

Normal

⚡ = Faulty slide stand switch

Normal

⚡ = Open in if wire broken
 ⚡ = Loose or poor contact connection

Starter motor turns engine slowly

- Low battery voltage
- Poorly connected battery terminal cable
- Poorly connected starter motor cable
- Faulty starter motor
- Poorly connected battery ground cable

Starter motor turns, but engine does not turn

- Starter motor is running backwards
 - Case assembled improperly
 - Terminals connected improperly
- Faulty starter clutch
- Damaged or faulty starter drive gear

Starter relay switch "Clicks," but engine does not turn over

- Crankshaft does not turn due to engine problems

STARTER MOTOR

REMOVAL

Remove the air cleaner housing. (page 5-53)

Wipe the oil off the top of the engine and the negative cable of the battery before soiling the starter motor.

Remove the nut that the master bolt secures the motor to the engine.

Remove the master bolt using a nut and a rubber mallet.

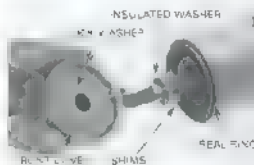
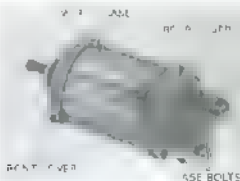
Put the starter motor out of the engine compartment.



DISASSEMBLY

Remove the following:
Starter motor case (oil)
Rear cover

Remove the following:
Stator
Link washer
Insulated washer
Shims
Armature



INSPECTION

Check for continuity between the brush and cable terminal (the indigo colored wire on the insulated brush holder).

There should be continuity.



Check for continuity between the motor case and cable terminal.

There should be no continuity.

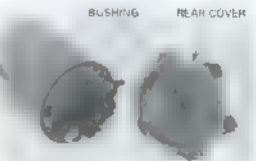


Inspect the brushes for damage and measure the brush length.

SERVICE LIMIT 4.5 mm (0.18 in)



Check the bushing in the rear cover for wear or damage.



ELECTRIC STARTER

Check the oil seal and needle bearing in the front cover for deterioration, wear or damage.



Do not use any oil. Check the commutator bars of the armature for discoloration.

COMMUTATOR



Check for continuity between pairs of commutator bars. There should be continuity.



Check for continuity between each commutator bar and the armature shaft. There should be no continuity.

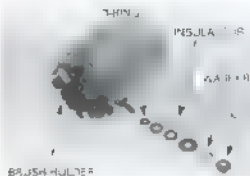
COMMUTATOR

ARMATURE SHAFT

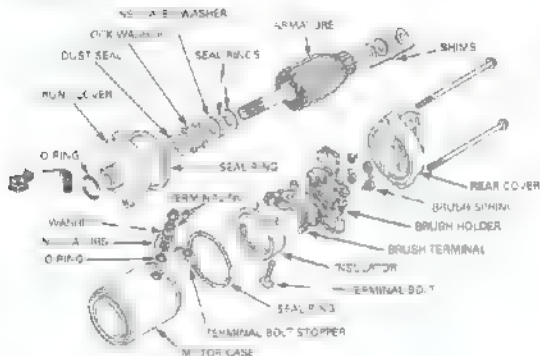


Remove the following:

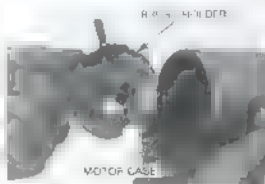
- Nut
- Washer
- Insulator
- O-ring
- Brush holder assembly
- Brush terminal



ASSEMBLY



Install the armature into the motor case. Align the armature with the motor case. Align the armature with the motor case. Align the armature with the motor case.



ELECTRIC STARTER

Insert the modules properly as shown in the diagram.

Install the following:
New O-ring
Insulator
Washer
Nut

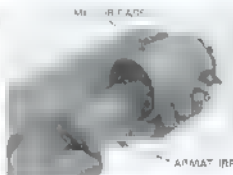


Do not make the damaged if the armature is bent.

Install the armature in the motor case. When installing the armature into the motor case, be careful not to damage the armature by pulling it too hard.

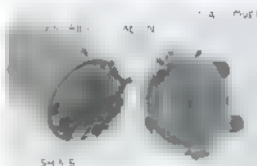
NOTICE

Do not use the armature if it is bent or damaged.



Install the same number of brushes in the same location as the old brushes. Install a new set of brushes in the motor case. Apply a thin coat of grease to the armature shaft and

Install the new cover while pushing in the brushes. Do not use the cover if it is bent or damaged.



Insert the brush holder cover into the motor case.

Install the brush holder cover and brush holder washer onto the armature shaft. Do not use the brush holder cover if it is bent or damaged.

Install the O-ring onto the brush holder. Install the brush holder.



Make sure the index lines are aligned



Install and tighten the case bolts securely



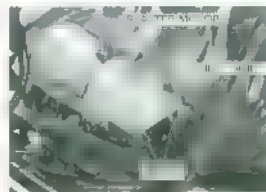
INSTALLATION

Connect the wiring with all ground wires into the starter terminal block

Reinstall this starter motor into the crankcase



Route the starter motor cable and ground wire
Install the ground cable and mounting bolts
and tighten the nuts securely



ELECTRIC STARTER

Install the starter motor cable, then tighten the terminal nut to the specified torque.

TORQUE 12 Nm (ft 2 kgfcm 9 lbfcm)

Install the rubber cap securely.



STARTER RELAY SWITCH

OPERATION INSPECTION

Remove the right side cover (page 2-2).

Shift the transmission to RUN or 1st.
Turn the ignition switch ON and engine stop switch to RUN.
Push the starter switch button.
The coil is normal if the starter relay switch clicks.

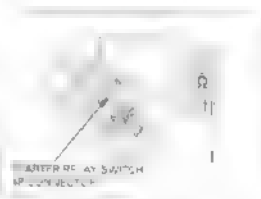
If you don't hear the switch "CLICK," check the relay switch using the procedure below.

GROUND LINE INSPECTION

Understand the start relay switch is 2P connector.

Check for continuity between the Green/yel wire (ground line) and ground.

If there is continuity when the transmission is in RUN or 1st, when the coil is 2P connector, there is a short circuit. If in neutral, there is a slight resistance due to the diode.

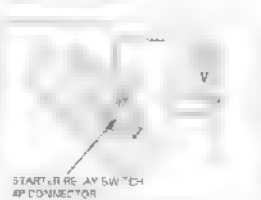


STARTER RELAY VOLTAGE INSPECTION

Connect the starter relay switch 4P connector.

Find the voltage in the coil.
Measure the voltage between the red wire and ground.

If the battery voltage appears only when the starter switch is pushed with the ignition switch ON and engine stop switch at RUN, it is normal.

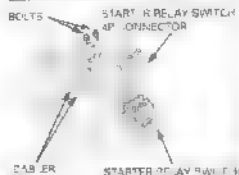


REMOVAL/INSTALLATION

Remove the right side cover (page 2-2)

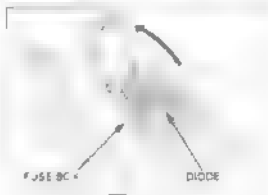
Disconnect the starter relay 4P connector
Disconnect the cables from the starter relay

Remove the starter relay assembly from the frame guide

**DIODE****REMOVAL**

Remove the right side cover (page 2-2)

Open the fuse box and remove the diode

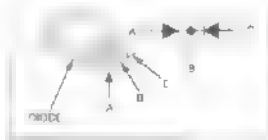


Check for continuity between the diode terminals.
If there is continuity, a small resistance value will register.

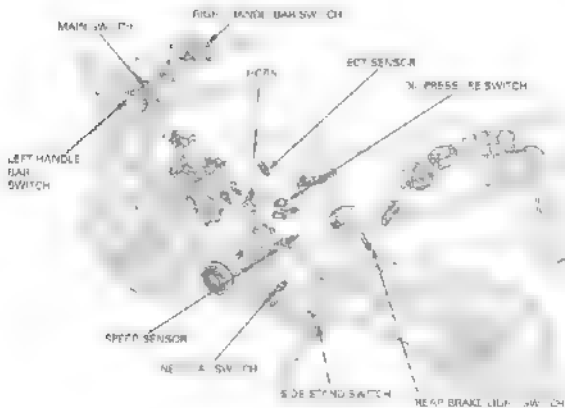
If there is continuity, in one direction, the diode is good.

INSTALLATION

Install the diode in the reverse order of removal.



SYSTEM LOCATION



19. LIGHTS/METERS/SWITCHES

SYSTEM LOCATION	19-0	OIL PRESSURE SWITCH	19-16
SERVICE INFORMATION	19-1	FAN MOTOR CONTROL RELAY	19-16
TROUBLESHOOTING	19-3	FUEL RESERVE SENSOR	19-18
HEADLIGHT	19-4	IGNITION SWITCH	19-19
TURN SIGNAL	19-8	HANDLEBAR SWITCHES	19-20
TAIL/BRAKE LIGHT	19-7	BRAKE LIGHT SWITCH	19-21
LICENSE LIGHT	19-6	CLUTCH SWITCH	19-21
COMBINATION METER	19-8	NEUTRAL SWITCH	19-21
TACHOMETER	19-11	SIDE STAND SWITCH	19-22
SPEEDOMETER, SPEED SENSOR	19-12	HORN	19-23
COOLANT TEMPERATURE GAUGE, SENSOR	19-14	TURN SIGNAL RELAY	19-23

SERVICE INFORMATION

GENERAL

NOTE

A halogen headlight bulb can get very hot while the motorcycle is off and can ignite a flammable liquid or other fire hazard. OFF before you let it cool down before servicing.

- Note the following when replacing the halogen headlight bulb.
When you get your new replacement bulb, do not touch the bulb with your fingers. The oil on your fingers will contaminate the bulb. If you have the oil on your fingers, use a clean cloth to wipe it off. The bulb is coated with a special protective coating to prevent the oil from getting on the bulb. Be sure to install the dust cover after replacing the bulb.
- Check the bulb type and wattage. The bulb must be the same type and wattage as the original bulb. The bulb must be the same type and wattage as the original bulb.
- The following color codes are used throughout this section.
BL = Blue GR = Green LG = Light Green R = Red
BK = Black W = White O = Orange W = White
BR = Brown LB = Light Blue P = Pink Y = Yellow

SPECIFICATIONS

ITEM			SPECIFICATIONS
Bulbs	Headlight	H1	4V 60 W
		L	2V 55 W
	Brake light unit		12V 16 W X 2
	Turn signal light	F	12V 21 W X 2
		5474	12V 21 W
	License light		12V 5 W
	Side marker		12V 1.7 W X 3
	Position indicator		12V 1.7 W X 2
	High beam indicator		LED
	Neutral indicator		LED
Fuses	Power window		15 A
	Power window		15 A
	Power window		30 A
	Power window		20 A
Fuses			30 A X 1 10 A X 1
Fuses			2.1 2.5 2.5
Fuses			0.5 0.5 0.5

TORQUE VALUES

Coolant temperature sensor	22 Nm (2.3 kgf-m) 2.3 Nm
Safe status switch unit	10 Nm (1.0 kgf-m) 1.0 Nm
Ignition switch mounting bolt	25 Nm (2.5 kgf-m) 2.5 Nm
Fan motor switch	10 Nm (1.0 kgf-m) 1.0 Nm
Oil pressure switch	12 Nm (1.2 kgf-m) 1.2 Nm
Power window switch with terminal bolt	2 Nm (0.2 kgf-m) 0.2 Nm
Neutral switch	15 Nm (1.5 kgf-m) 1.5 Nm

▲ If the bolt is replaced with a new one.

Apply sealant to the threads.
Apply sealant to the threads.

TROUBLESHOOTING

SPEED SENSOR/SPEEDOMETER

The odometer/strip meter operates normally, but the speedometer does not operate.

- Faulty speedometer

The speedometer operates normally, but the odometer/strip meter does not operate.

- Faulty odometer/strip meter

The speedometer operation is abnormal.

Check to the following before diagnosing.

1. Check the battery voltage.

2. Check the connection of the connectors.

3. Check the battery.

Check for loose or poor contact of the speed sensor (2P) Natural connector.

With the ignition switch ON and measure the voltage at the speed sensor connector.

Normal



Check the voltage of the battery. If the battery voltage is normal, check the connection of the speed sensor.

With the ignition switch ON, measure the voltage at the bottom of the speedometer terminal.

Normal



With the ignition switch ON, check the condition of the speed sensor. If the speed sensor is normal, check the speed sensor and speedometer.

Normal



Check the voltage of the battery. If the battery voltage is normal, check the condition of the speed sensor. If the speed sensor is normal, check the speed sensor and speedometer.

Normal



Abnormal

Check the speed sensor connector.

Open circuit in Blue/brown or Green/black wires between the battery and speed sensor.

Abnormal

Check the speed sensor connector.

Open circuit in Blue/brown or Green/black wires between the battery and speedometer.

Abnormal

Check the speed sensor connector.

Abnormal

Check the speed sensor.

Open circuit in Blue/brown or Green/black wires between the battery and speedometer.

== Faulty speed sensor

HEADLIGHT

BULB REPLACEMENT

Remove the headlight unit (page 19-5).
Disconnect the headlight bulb connector.
Remove the dust cover.

Remove the position light bulb from the socket.

Unhook the bulb retainer and remove the headlight bulb.

NOTICE

Avoid touching halogen headlight bulbs. Finger prints can create hot spots that cause a bulb to break.

Install a new bulb into the socket.

Install the new headlight bulb/socket aligning its tabs with the groove in the headlight unit.

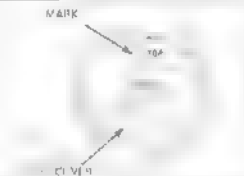
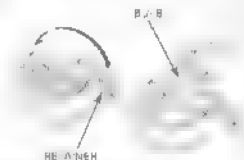
Hook the bulb retainer into the headlight unit groove.

Install the dust cover tightly against the headlight unit with its arrow mark facing up.

Connect the headlight connector.

Install the headlight unit (page 19-6).

HEADLIGHT UNIT



REMOVAL

Remove the screws and headlight unit.

Disconnect the headlight bulb connector (page 19-4).
Remove the plastic light bulb socket (page 19-4).



Remove the wires from the clamps.

Remove the bolts, clamps/nuts and headlight base.

Remove the wires from the road light base.



INSTALLATION

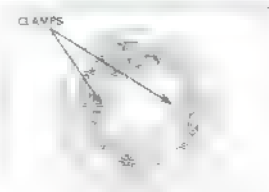
Install the wires to the headlight cable.

Install the headlight base, install the wires to the headlight base, install the light bulb socket and light bulb.

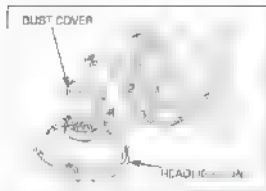
Install the bolts, nuts, clamps and tighten them.



Install the wires to the clamps as shown.



Connect the headlight bulb connector.
Install the position bulb socket.



Install the headlight and adjust the screws.

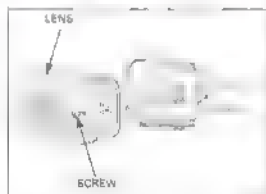
Adjust the headlight Aim (page 3-22)



TURN SIGNAL

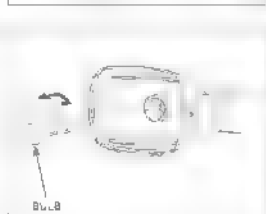
BULB REPLACEMENT

Remove the 30-watt and turn signal lens.



While pushing in, turn the bulb clockwise to
remove them and replace with new ones.

Install the turn signal lens in the reverse order of
removal.

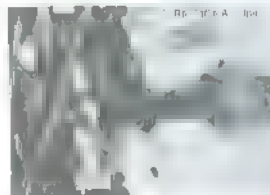


REMOVAL/INSTALLATION

Remove the headlight case (page 9-51).
Disconnect the turn signal wire connectors.



Remove the turn signal mounting nut.
Release the turn signal wire and remove the turn signal unit.



Install the turn signal unit in the reverse order of removal.

TAIL/BRAKE LIGHT

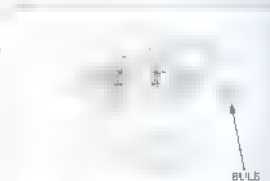
BULB REPLACEMENT

Remove the bulbs and tail/brake light lens.



Remove the tail/brake light bulbs and replace with new bulbs.

Install the tail/brake light lens in the reverse order of removal.



LICENSE LIGHT

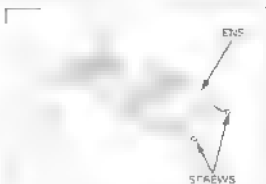
BULB REPLACEMENT

Remove the screws and license light lens.



Remove the license light bulb and replace with a new one.

Insert the license light lens in the reverse order of removal.

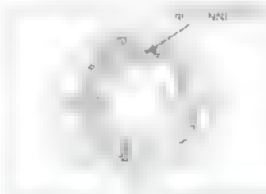


COMBINATION METER

REMOVAL

Remove the headlight lens (page 19-5).

Disconnect the combination meter GP connectors.

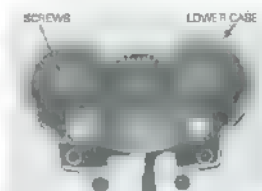


Remove the combination meter from the instrument panel.



DISASSEMBLY

Remove the screws and pry the top cover off the case.



Remove the rubber cover and the screws.

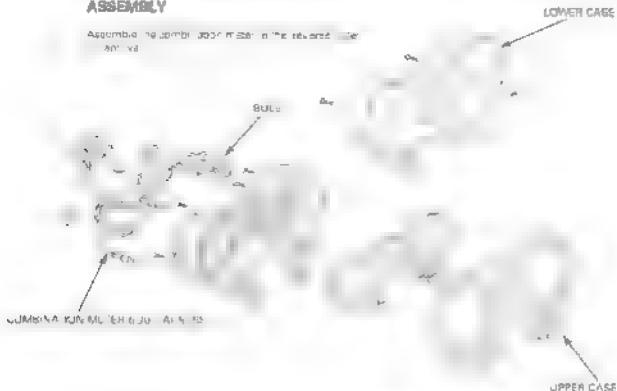


Remove the screws and combine in the proper order.



ASSEMBLY

Assemble the Jumbo 3000 Meter in the relevant case as follows:



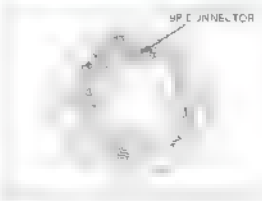
INSTALLATION

Install the combination meter into the slot. You remove the rubber cap which is on the way. Install it in the original position. Install and tighten the combination meter mounting nuts securely.

Install the headlight case page 19-10.



Tighten the combination meter 20" or more.



TACHOMETER

SYSTEM INSPECTION

Remove the headlight unit, page 9-5.

Disconnect the combination meter SP (black) wire for

Check the loose or poor contact terminals of the combination meter.

With the ignition switch ON, measure the voltage at the combination meter SP (black) connector.

CONNECTION

Black/brown (a) - Ground (b)
Standard: Battery voltage

If there is no voltage, check for the following:
Circuit: a Black/brown wire
Battery
- fuse (10A)

Connect the peak voltage adapter (page 13-4).

TOOLS

Peak voltage tester (J 24 4-00)

Peak voltage adapter 07HCJ 0920-00
(not available in U.S.A.)

With immediately available digital multimeter
(impedance 10 M Ω /DCV minimum)

Connect the peak voltage adapter to the tachometer.

Yellow/green cable (a) - end ground

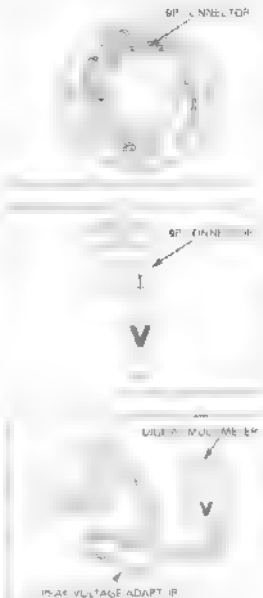
Start the engine and measure the tachometer input peak voltage.

PEAK VOLTAGE 10.5 V minimum

If the value is normal, replace the combination meter

the replacement of the peak voltage adapter

E.M.



If the value is 0 v, perform the following:
 Disconnect the combination meter 9P Black connector (page 19-9)
 Disconnect the ECM 22P Black connector (page 17-12)

Check for continuity between the combination meter 9P Black connector terminal and the ECM multi-connector Yellow/green terminals.

† There is no continuity, check the wire harness and combination meter sub-harness for an open circuit.
 ‡ There is continuity, replace the ECM.

ECM 22P Black connector



SPEEDOMETER/SPEED SENSOR

SYSTEM INSPECTION

Remove the test side cover (page 2-2).

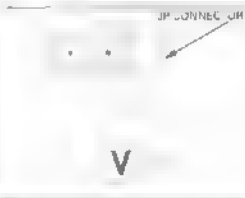
Disconnect the speed sensor 3P connector and check for loose or poor contact of the connector.

With the ignition switch is ON and measure the voltage at the speed sensor 3P connector of the wire harness side.

CONNECTION

Black/brown (+) - Green/black (-)
 Standard: Battery voltage

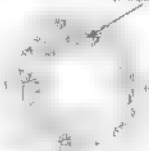
3P CONNECTOR



Remove the headlight unit (page 18-5).

Check for loose or poor contact of the combination 9P connectors.

9P CONNECTOR



With the ignition switch ON and measure the voltage at the bottom of the combination meter terminals.

CONNECTION

Black/brown (+) Green (-)

Standard: Battery voltage

CONNECTION

Pink/green (+) Green (-)

Standard: Battery voltage

Use a voltmeter to check for 12V to the no.

4V - 12V 0.5A

Rating

Fuse 10A

Disconnect the speed sensor 3P connector.
Disconnect the combination BP 3P connector.

With the ignition switch OFF, check for continuity of the following wires between the speed sensor connector and combination meter terminal.

There should be continuity.

If there is no continuity, check the wire harness.

Support the motorcycle using a hoist or other support so the chain will hold the ground.

Adjust the throttle cable to the correct position. The throttle cable should be adjusted so that the throttle is fully open when the throttle lever is fully open.

CONNECTION

Pink/green (+) Green (-)

Standard: Repeat # to # V

After the installation is complete, inspect the speed sensor for proper operation.

SPEED SENSOR REMOVAL/INSTALLATION

Remove the air cleaner housing (page 5-53).

Disconnect the speed sensor 3P connector and check for loose or poor contact at the connector.



1. Check for 12V



3P CONNECTOR

Remove the battery sensor.



Remove the D-ring.

Install the battery sensor.



COOLANT TEMPERATURE GAUGE /SENSOR

Disconnect the coolant temperature sensor from the engine.

Ground the ECT sensor connector when the engine is running with a jumper wire at the engine bay/hood side.



Turn the ignition switch to the "ON" position.

Disconnect the coolant temperature sensor from the engine.

Ground the ECT sensor connector when the engine is running with a jumper wire at the engine bay/hood side.

NOTICE

Immediately disconnect the sensor wire connector from the coolant temperature gauge when the engine is running.



If the needle moves, crack the ECT sensor unit (see below).

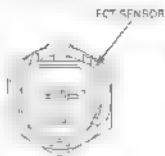
If the needle does not move, check for voltage between the sensor wire connector and ground.

If the voltage is measured, the coolant temperature gauge unit is faulty.

If there is no voltage, check for voltage between the black/brown and white/brown wire terminal.

If there is no voltage between the sensor and the temperature gauge unit is faulty.

If a voltage is measured, check for the wire harness.



ECT SENSOR UNIT INSPECTION

Remove the ECT sensor (page 8-3).

Disconnect the wire connector from the ECT sensor and remove the sensor.

Suspend the ECT sensor in a bath of coolant (50-60 inches) at electric heating elements and measure the resistance through the sensor as the coolant heats up.

- Soak the ECT sensor in coolant up to its threads with at least 40 mm (1 5/8 in) from the bottom of the

ECT Sensor Resistance (ohms)	ECT Sensor Temperature (°C)
100	100
200	150
300	200
400	250
500	300
600	350
700	400
800	450
900	500
1000	550

ECT Sensor Resistance (ohms)	ECT Sensor Temperature (°C)
100	100
200	150
300	200
400	250
500	300
600	350
700	400
800	450
900	500
1000	550

Heat the bath at 10-15°C per hour and measure the resistance every 10 minutes.

ECT SENSOR CONNECTOR



Always replace the sensor after repair.

and tighten the 1/4 inch to the specified torque.

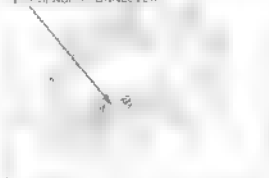
(TORQUE 23 Nm (17 lb-ft) 120 in-lb)



Connect the ECM fuel pump sensor connector

Fill the system and bleed the air (page 6-4)

FUEL SENSOR CONNECTOR



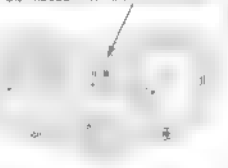
OIL PRESSURE SWITCH

INSPECTION

If the oil pressure warning indicator stays on while the engine is running, check the engine oil level before inspection.

Make sure that the oil pressure warning indicator comes on with the ignition switch ON.

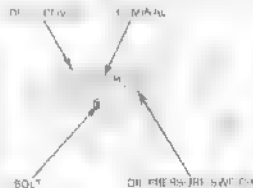
OIL PRESSURE WARNING INDICATOR



If the indicator does not come on, inspect as follows:

Remove the fuse cover

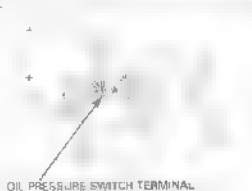
Remove the bolt and oil pressure switch terminal



Short the oil pressure switch wire terminal to ground using a jumper wire.

The oil pressure warning indicator burns on when the ignition switch is ON.

If the light does not come on, check the fuse-fuse OK.



Check for continuity between the combination meter BP connectors terminal and the oil pressure switch wire Blue/red terminals.

If there is no continuity, check the wire harness and combination meter sub-harness for an open circuit.

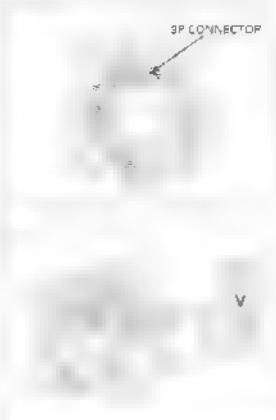
With the ignition switch ON, measure the voltage at the bottom of the combination meter terminal 3.

CONNECTION

Blue/red (+) - Green

Standard: Battery voltage

If the value is normal, replace the combination meter assembly.



REMOVAL/INSTALLATION

Remove the bolt from the oil pressure switch.

Remove the oil pressure switch from the crankcase.

Do not apply sealant to the O-ring.

Apply sealant to the oil pressure switch threads as shown.



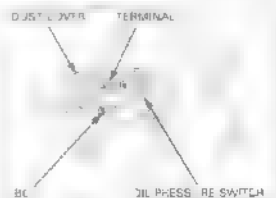
Install the oil pressure switch onto the crankcase, tighten it to the specified torque.

TORQUE: 12 N·m (11.2 kgf·m, 9 lbf·ft)

Connect the oil pressure switch terminals to the switch and tighten the screw to the specified torque.

TORQUE: 2 N·m (0.2 kgf·m, 1.4 lbf·ft)

Install the dust cover.



FAN MOTOR CONTROL RELAY

INSPECTION

Open and support the front end of the fuel tank
(page 3-4)

Check for a blown fuse before inspection

Fan motor does not stop

Turn the ignition switch OFF, disconnect the fan motor control relay 4P connector and turn the ignition switch ON again

If the fan motor does not stop, check for a shorted wire between the fan motor and relay

If the fan motor stops, replace the fan motor control relay

Fan motor does not start

Before testing, warm up the engine to the operating temperature

Disconnect the fan motor control relay 4P connector and short the Red/green and Blue/violet terminals of the connector with a jumper wire
Turn the ignition switch ON and check for a click from the motor

If the motor does not start, check the connection at the fan motor 2P connector and between the Open circuit in Black/blue wire

Wire harness is OK, Check for below

With the ignition switch is ON and measure the voltage at the fan motor control relay 4P connector

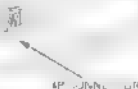
CONNECTOR

Black/white (+) Ground (-)

Standard: Battery voltage

If there is no voltage, check for open circuit in Blue/white wire

If the value is normal, replace the fan motor control relay



FUEL RESERVE SENSOR

INSPECTION

Turn the ignition switch is ON and make sure the fuel reserve indicator comes ON

If the fuel reserve indicator does not indicate properly, check for the following.



Disconnect the fuel reserve wire at JP connector.
 Short the wire harness side connector Red/black and Green terminals with a jumper wire.

Turn the ignition switch to ON and make sure the fuel reserve indicator comes ON.

If the indicator comes ON, replace the fuel pump assembly.

If the indicator still comes ON, check for an open or short circuit in wire harness.

If the wire harness is OK, replace the computer main meter.

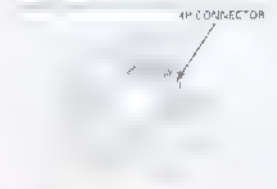


IGNITION SWITCH

INSPECT ON

Remove the headlight unit (page 18-5).

Disconnect the ignition switch wire 4P connector.



Check for continuity between the wire and the ignition switch connector in each switch position.
 Continuity should exist between the color-coded wires as follows:

IGNITION SWITCH

	KEY	LOCK	BAT	GROUND	KEY
ON	○	○	○	○	KEY ON
OFF	○	○	○	○	KEY OFF
LOCK	○	○	○	○	KEY LOCK
COLOR	RED	BLACK	GREEN	RED/BLACK	LOCK PIN



REMOVAL/INSTALLATION

Remove the top bridge (page 18-23).

Remove the bolts and ignition switch.

Install the ignition switch in the reverse order of removal.

Tighten the ignition switch mounting bolt to the specified torque.



TORQUE: 25 N·m (2.5 kgf·m, 18 lbf·ft)

HANDLEBAR SWITCHES

Remove the headlight unit (page 15-6)

Disconnect the handlebar switch harness

1. TURN SIGNAL SW. 2. WIPER 3. HORN SW.

Check for continuity between the wire terminals of the handlebar switch harness for
Continuity should exist between the color coded wire terminals as follows:

1. TURN SIGNAL SW. 2. WIPER

ENGINE STOP SWITCH

8277

1. STOP	2. STOP	3. STOP
4. STOP	5. STOP	6. STOP

STARTER SWITCH

1. START	2. START	3. START	4. START
5. START	6. START	7. START	8. START
9. START	10. START	11. START	12. START
13. START	14. START	15. START	16. START

TURN SIGNAL SWITCH

1. TURN SIGNAL	2. TURN SIGNAL	3. TURN SIGNAL	4. TURN SIGNAL
5. TURN SIGNAL	6. TURN SIGNAL	7. TURN SIGNAL	8. TURN SIGNAL
9. TURN SIGNAL	10. TURN SIGNAL	11. TURN SIGNAL	12. TURN SIGNAL
13. TURN SIGNAL	14. TURN SIGNAL	15. TURN SIGNAL	16. TURN SIGNAL

PASSING SWITCH

1. PASSING	2. PASSING	3. PASSING
4. PASSING	5. PASSING	6. PASSING
7. PASSING	8. PASSING	9. PASSING
10. PASSING	11. PASSING	12. PASSING

DIMMER SWITCH

1. DIMMER	2. DIMMER	3. DIMMER
4. DIMMER	5. DIMMER	6. DIMMER
7. DIMMER	8. DIMMER	9. DIMMER
10. DIMMER	11. DIMMER	12. DIMMER

HORN SWITCH

1. HORN	2. HORN	3. HORN
4. HORN	5. HORN	6. HORN
7. HORN	8. HORN	9. HORN
10. HORN	11. HORN	12. HORN

BRAKE LIGHT SWITCH

FRONT

Disconnect the front brake light switch connections and check for continuity between the terminals.

There should be continuity with the brake lever applied, and there should be no continuity when the brake lever is released.

REAR

Remove the seat (page 2-2).

Disconnect the rear brake light switch connector and check for continuity between the terminals.

There should be continuity with the brake pedal applied, and there should be no continuity when the brake pedal is released.

FRONT BRAKE LIGHT SWITCH



2P CONNECTOR



BRAKE PEDAL

CLUTCH SWITCH

Disconnect the clutch switch connectors.

There should be continuity with the clutch lever pulled, and there should be no continuity when the clutch lever is released.



NEUTRAL SWITCH

Disconnect the neutral switch connectors from the wiring.

Shift the transmission into neutral and check for continuity between the light green wire terminal and ground.

There should be continuity when the transmission is in neutral, and no continuity when the transmission is in gear.

NEUTRAL SWITCH



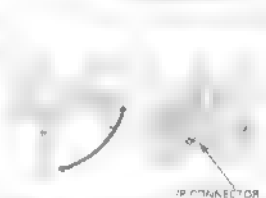
SIDE STAND SWITCH

INSPECTION

Disconnect the side stand switch 2P 10-pin connector.

Check for continuity between the wire terminals of the side stand switch connector.

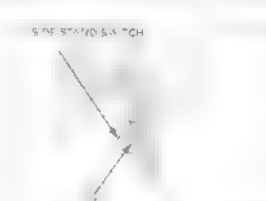
Continuity should exist only when the side stand is up.



REMOVAL

Disconnect the side stand switch 2P 10-pin connector.

Remove the bolt and side stand switch.



INSTALLATION

Install the side stand switch by aligning the switch pin with the side stand hole and the switch groove with the return spring holding pin.

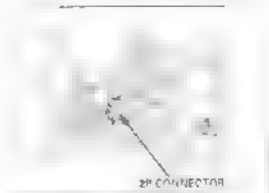
Secure the side stand switch with a new bolt.

TORQUE 10 N·m (1.0 kg·m, 7 lbf·ft)



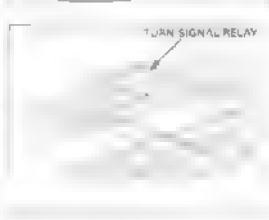
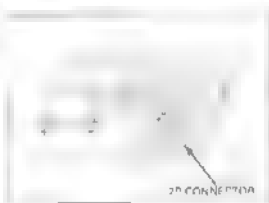
Connect the side stand switch 2P (Green) connector

Install the side cover (page 2-22)



Disconnect the wire connectors from the horn.

Connect the 12V battery to the horn terminal directly.
The horn is normal if it sounds when the 12 V battery is connected across the horn terminals.



TURN SIGNAL RELAY

INSPECTION

Check the following:

- Battery condition
- Burned out bulb or non-specified wattage
- Burned fuse
- Ignition switch and turn signal switch function
- Loose connectors

If the above items are all normal, check the following:

Remove the rear cowling (page 2-3)

Disconnect the turn signal connectors from the relay.

Short the White/Green and Gray terminals of the turn signal relay connector with a jumper wire.

Start the engine and check the turn signal light by turning the switch ON.

Light comes on Light does not come on

+ Broken wire harness

Check for continuity between the Green terminal of the relay connector and ground.

Continuity

No continuity

+ Broken wire harness

Faulty turn signal relay.
For connector of the connector

20. WIRING DIAGRAMS

20

0030Z MCZ-6700
0030Z MCZ-7700

20 f

21. TROUBLESHOOTING

ENGINE DOES NOT START OR IS
HARD TO START

21-1

ENGINE LACKS POWER

21-2

POOR PERFORMANCE AT LOW
AND IDLE SPEED

21-3

POOR PERFORMANCE AT HIGH
SPEED

21-4

POOR HANDLING

21-4

ENGINE DOES NOT START OR IS HARD TO START

Possible Causes

1. Check for operation of the fuel pump

Abnormal

Faulty fuel pump (Section 5)

Normal

Y

2. Inspect the fuel filter

Abnormal

Faulty fuel filter (Section 5)

Normal

Y

3. Inspect the fuel injection

Abnormal

See section 5

Normal

Y

4. Perform a spark test

Weak or no spark

- Faulty spark plug
- Faulty coil or coil plug
- Faulty ECU
- On start of engine, the spark plug wire quality and its wiring
- Faulty ignition pulse generator
- Faulty engine stop switch
- Check the engine stop switch wiring

Good spark

Y

5. Perform compression

Low compression

- Valve timing error
- Worn cylinder and piston ring
- Too large cylinder head gasket
- Sticky valve
- Ignition valve timing

Abnormal (no oil)

Y

6. Starting following normal procedure

Engine starts at
at idle

- Improper choke operation
- Take the battery, the fuel filter and the ECU to the shop for repair
- Check the fuel pump
- Check the fuel filter

Engine does not start

Y

7. Remove and inspect spark plug

Wet plug

- Choke closed
- The choke valve open
- Clogged air cleaner

ENGINE LACKS POWER

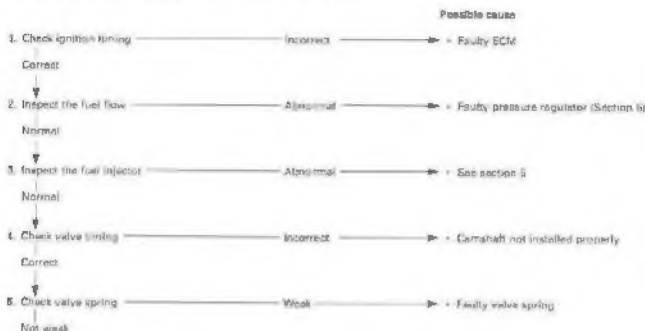
1	Raise wheel on the ground and spin the hand	Wheel does not spin freely	<ul style="list-style-type: none"> • Brake dragging • Worn or damaged wheel bearing
	Wheel spins freely		
2	Check tire pressure Pressure normal	Pressure low	<ul style="list-style-type: none"> • Faulty valves • Punctured tire
3	Accelerate rapidly to the test speed and Engine speed does not when clutch is released	Engine speed does not change significantly when clutch is released	<ul style="list-style-type: none"> • Clutch slipping • Worn clutch discs/plates • Worn clutch mechanism • Loose clutch linkage • Additive in engine oil
4	Accelerate gently Engine speed increases	Engine speed does not increase	<ul style="list-style-type: none"> • Air leak in filter • Restricted fuel flow • Clogged muffler • Restricted fuel tank breather
5	Check ignition switch Correct	Ignition switch faulty	<ul style="list-style-type: none"> • Faulty ignition pulse generator
6	Test cylinder compression Normal	Low	<ul style="list-style-type: none"> • Valve stuck open • Worn cylinder and piston rings • Worn or damaged valves • Improper valve timing
7	Inspect fuel filter Normal	Air or dirt	<ul style="list-style-type: none"> • Faulty pressure regulator (Section 6)
8	Inspect the fuel injectors Normal	Air or dirt	<ul style="list-style-type: none"> • Faulty injectors
9	Remove spark plugs Not fouled or discolored	Fuelling or discolored	<ul style="list-style-type: none"> • Faulty spark plug
10	Check oil level and condition Correct	Low or dirty	<ul style="list-style-type: none"> • Oil level too high • Oil level too low • Contaminated oil
	Remove cylinder head cover and inspect lubrication Valve train lubricated properly	Oil level or dirty	<ul style="list-style-type: none"> • Clogged oil passage • Clogged oil drain or filter

		Possible cause
<p>11. Check for engine overheating</p> <p>Not overheating</p>	Overheating	<ul style="list-style-type: none"> • Coolant level low • Fan motor not working (faulty fan motor switch) • Thermostat stuck closed • Excessive carbon build-up on cooling surfaces • Use of poor quality fuel • Wrong type of fuel • Clutch slipping
<p>12. Accelerate or run at high speeds</p> <p>Engine does not revolve</p>	Engine knocks	<ul style="list-style-type: none"> • Worn piston and cylinder • Wrong type of fuel • Excessive oil used (oil rings can build up chamber) • Ignition timing is advanced (oil is M) • Clean fuel injection

POOR PERFORMANCE AT LOW AND IDLE SPEED

		Possible cause
<p>Check idling in the</p> <p>Good</p>	Normal	<ul style="list-style-type: none"> • Improper idling timing
<p>13. Check the starter valve synchronization</p> <p>Normal</p>	Normal	<ul style="list-style-type: none"> • See section 5
<p>14. Inspect the fuel flow</p> <p>Normal</p>	Abnormal	<ul style="list-style-type: none"> • Faulty pressure regulator (Section 5)
<p>15. Inspect the fuel injector</p> <p>Normal</p>	Abnormal	<ul style="list-style-type: none"> • See section 5
<p>16. Check for leaks in the intake pipe</p> <p>No leaking</p>	Leaking	<ul style="list-style-type: none"> • Loose intake clamp • Damaged insulator
<p>17. Perform spark test</p> <p>Good spark</p>	Weak or intermittent spark	<ul style="list-style-type: none"> • Faulty spark plug • Faulty carbon or wet to light spark plug • Faulty ECM • Faulty ignition coil • Faulty engine stop switch • Faulty ignition pulse generator • Faulty ignition switch • Loose or disconnected ignition system wires

POOR PERFORMANCE AT HIGH SPEED



POOR HANDLING



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